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STEEL is published every Monday by PENTON PUBLISHING CO., Penton Building, Cleveland, O. JOHN A. PENTON, Chairman of the Board; C. J. STARK, President; J. D. PEASE, Vice President; F. V. COLE, Secretary.

Member Associated Business Papers Inc. and National Publishers Association. Branch Offices: New York, 220 Broadway; Chicago, Peoples Gas building; Pittsburgh, Oliver building; San Francisco, Claus Spreckels building, 703 Market street; Washington, National Press building; Cincinnati, Schmidt building; London, Caxton House, Westminster, S. W. 1; Berlin, Lichterfeld-West, Dahlmerstrasse, 64a, Germany. Subscription in the United States, Cuba and Mexico, one year $4, two years $6; in Canada one year $6.60, two years $11.20; in Great Britain and European countries, one year £2; two years £3.

Entered as second class matter at postoffice at Cleveland under the Act of March 3, 1879.

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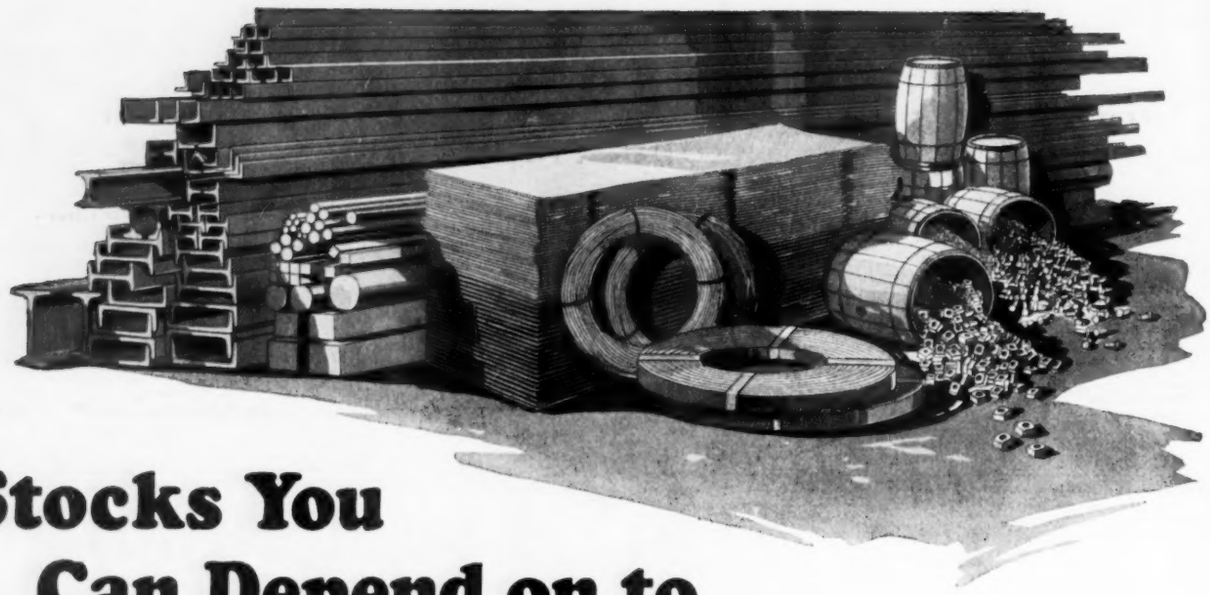

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STEEL-SERVICE

Volume 92 Number 26

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

WASHINGTON learned 15 years ago that war is hell, and now it is finding that recovery from depression is a mess (p. 13). Trying to line up industry under the recovery act, get a three-billion dollar public works program started, correct the agricultural situation, co-ordinate the railroads, reclaim the Tennessee valley, run a conference at London and find jobs for deserving Democrats—there is no end of confusion, and Washington sighs for the calm days of 1932.

Steel Not Yet "Vulnerable"

Steel finds it difficult to shuffle the cards for its new deal. So varied are the problems, there is an outside chance that specific wage rates may not be named in the trade code being drafted, and the first step may be the setting-up of machinery to stabilize present rates. All this, however, will be settled this week in New York at a special institute meeting (p. 11). . . . Meanwhile, the recovery administration has issued (p. 12) basic principles for trade codes.

To Join or Not To Join, Labor's Problem

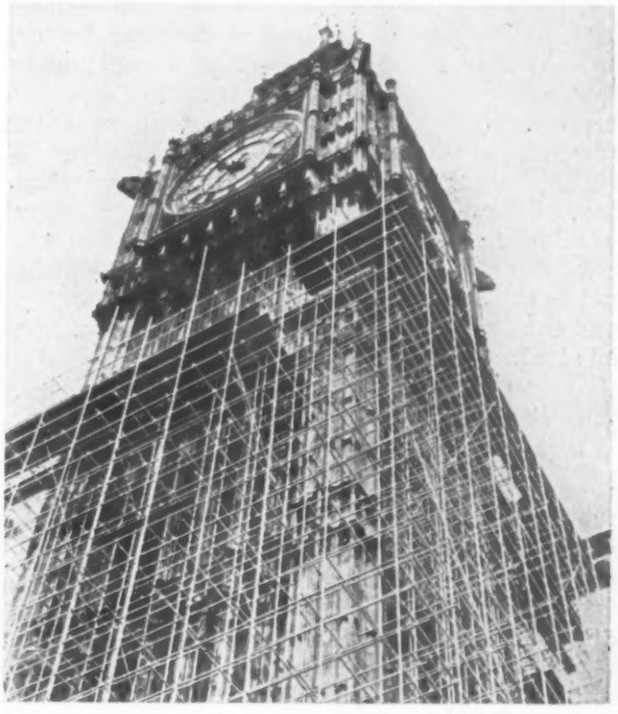
Washington is represented as wanting advances in commodity prices deferred until wages have had a chance to start the cyclical spiral upward, and while the intrinsic situation in iron and steel is strong, the rise in steel may not be as rapid or as near as expected (p. 47). . . . Whether fatter pay envelopes will retain labor's loyalty is important, as the American Federation of Labor is active (p. 46), probably advancing first on the automotive industry to try to organize it (p. 15).

Steel Rate Gains; Exports Improve

Industry continues to forge ahead as Washington muddles through its organization period. . . . Steelworks operations have crossed 50 per cent (p. 17), with no loss of momentum. . . . Automotive requirements for materials and retail sales indicate (p. 15) that this may be a 2,000,000-car year. Already, dies for new models are being placed. . . . In foreign trade, the balance grows more favorable (p. 16). Exports of iron and steel in May jumped 23,000 tons, to 123,069, while imports eased off 2000 tons to 28,061 tons. . . . The cable from London relays (p. 65) that the Continent is quiet but the British market is better; Poland has sold some rails to Brazil; Belgium is not letting any galvanized business slip past.

A. F. A. Mixes the Technical and Economic

General Johnson's program wedged itself deeply into the American Foundrymen's association convention in Chicago last week, when the effect of the recovery act upon foundries



Wide World Photo

Steel as a beauty aid! The maze of scaffolding erected aound the Westminster clock tower in London for "Big Ben's" annual cleaning

was weighed (p. 30), but technical features predominated. Beneficial properties are imparted to steel castings by various alloying elements, principally vanadium, chromium, molybdenum and nickel, it was pointed out (p. 43); also, that the deleterious effect of sulphur has been overestimated. The exhibition demonstrated (p. 45) in striking fashion the improvement in equipment and supplies the past two years.

Conveyors Bring New Efficiency in Enameling

Arrangement of spraying equipment, dryers, furnaces and inspection apparatus in combination with traveling conveyors in a vitreous enameling plant for sheet steel products is an important factor in the speed and efficiency of the process (p. 25). One midwestern stove manufacturer has been successful in centering operations about three overhead loop conveyors which converge at various points to facilitate transfer of work. . . . On the trail of the cause of blistering of enamel on cast iron, engineers recently experimented with two extremes of iron—a high silicon and a low silicon (p. 32). The high silicon iron won handily . . . . Another type of surface, applied for decorative effect on zinc die castings, is the so-called patina treatment (p. 32).

Research and Service Replace 'Caveat Emptor'

In buying as well as in manufacturing, the objective is a satisfactory product. Purchasing agents are short-sighted who are influenced only by dollars and cents; controlling factors (p. 36) should be the progressive position of the supplier in point of research, his strength in the industry, the service he renders. Close supervision of materials for repairs and maintenance also are factors in scientific purchasing. Likewise, as in the case of a tractor manufacturer, (p. 28), the ultimate aim of attaining desired characteristics in the finished product is the yardstick in setting up specifications and equipment for selection and heat treatment of steel.

This Is the Day of Alloy Steels

Stainless clad steel is being successfully welded for pipe work (p. 32), the weld having the same corrosion-resistant properties as the stainless veneer. . . . A leading New York department store recently exhibited (p. 27), a complete range of metalware for domestic use, all of 18-8 chrome-nickel steel. . . . German experiments have confirmed (p. 27) the value of molybdenum as an alloying element in cast iron, making for uniformity of hardness in castings with varying section thickness. . . . About 90 per cent of the molybdenum steel being produced in this country is made (p. 34) from calcium molybdate.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

Business and Politics*

The three turning points in American history are

1. The American revolution and the adoption of the federal constitution.

2. The abolition of slavery and the establishment of the permanency of the union.

3. The combined legislation of the last congress delegating legislative authority to the executive branch of the government and moving entirely out of the laissez-faire doctrine into that of a socialistic, co-operative and co-partnership arrangement between government and all its various individual and corporate lines of activity.

In this connection I have tried to point out that I have believed that the economic conditions were ripe for revival of industry and business; that our past history and experience should make us cautious, notwithstanding the suffering through which we have passed, about any revolutionary changes that would head us entirely away from the established theories and principles that have thus far enabled our people to have such a wide and universal distribution of our wealth in normal times.

Should Not Overlook Fundamentals of the Past

I have expressed these thoughts realizing that we cannot turn back now, that the change is here, but rather in the hope that in administering the new laws we may keep as close to these sound, fundamental rules of government and economic principles that have guided us in the past as it is possible to do so, and at the same time undertake through the recent legislation to bring about even a greater era of prosperity and a greater distribution of wealth than we have experienced at any time in the past.

To this end, therefore, every man and woman should aid and not obstruct the administration of the new legislation. This legislation should be given a fair and honest trial.. Those whose political principles will be wrenched or are already wrenched by the new philosophy must try to accustom themselves to this new legislation, commonly known as the "new deal," and as loyal, patriotic American citizens, undertake to bring about such wise administration of the powers conferred in the "new deal" as will produce the greatest possible good to the greatest number of people.

We must live, however, always in the hope that we will not completely abandon the basic principles of a free and democratic form of government that has already stood the test for a longer period than any other similar government in all history; a government that has given to a great number of people the greatest possible liberty and freedom of individual action and the most general distribution of wealth amongst all the people than has any nation in any other similar period under any other form of government in all the recorded history of the world.

FRED SARGENT, President,

Chicago & North Western Railway.

*Summary in conclusion of address presented at a luncheon meeting of the American Foundrymen's association and Foundry Equipment Manufacturers' association, Chicago, June 20, 1933.

Meet This Week on Code for Steel; Labor, Allocation Vex

NEW YORK

IRON and steel executives will meet in New York this week on invitation of the American Iron and Steel institute to consider and give approval to the code of trade ethics which has been drafted by a special committee of the institute. Wednesday probably will be the day.

While Washington has been urging that wage rates and the length of the work week be treated preliminarily in these codes, the final shape will not be clear until after this meeting.

Rumors of a 10 per cent boost in base rate July 1 persist, but numerous problems remain to be worked out. The first objective is stabilization of present rates which vary considerably even within districts.

It is not impossible that the overall code to be presented by the institute will make no specific reference to wages or prices and may primarily be for the purpose of setting up machinery—perhaps a central committee with many subcommittees.

It is not believed that steel prices will be increased simultaneously with wage rates, this being in accordance with the program at Washington to lift the purchasing power of labor immediately and give the cyclical spiral a chance to start upward. If wages are advanced July 1, prices may be held stationary until about Aug. 1.

There is, however, some question whether prices can be held in check a month in view of the strength naturally developing as the result of increased demand. Determination of a price policy seems necessary in view of the approach of the third quarter, and the situation may be such that independent of any program under the recovery act the price structure may stiffen.

Allocation of business is also believed to be under consideration, and it is possible that this may receive serious consideration at the general meeting of executives this week.

Despite assurances from Washington that the recovery act administration will not permit industry to be bludgeoned into unionization, and that the collective bargaining provisions of the act will not be enforced to the letter at the start if trade codes set up satisfactory wage and employment conditions, the labor situation continues a grave one.

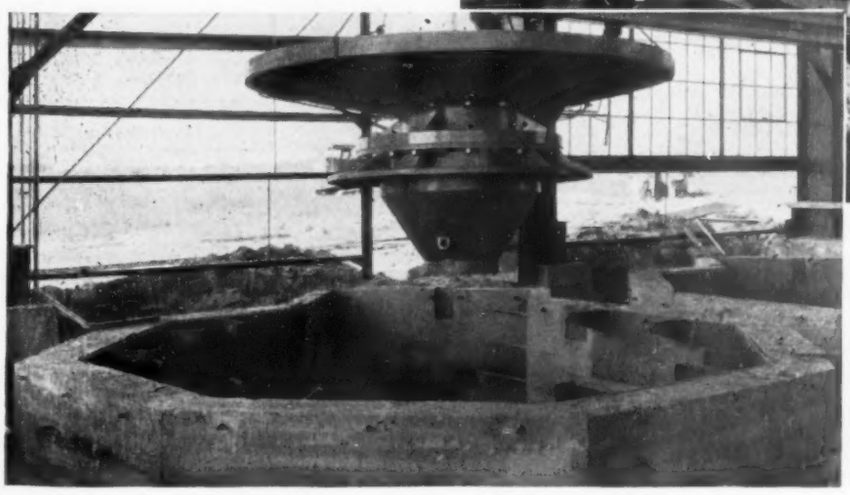
All United States Steel Corp. subsidiaries and many independents have by this time adopted an employe representation plan, along the general lines of the program of the Corporation as presented on page 13 of the June 19 issue of STEEL.

But the American Federation of Labor is understood to be opening organization headquarters in important iron and steel centers. It is not unlikely that the effort of the Federation will be to create horizontal unions in iron and steel plants and with these contest the authority of employe councils to speak for labor.

The American Iron and Steel institute code is expected to be an overall one for the iron and steel in-

Rotary Electric Steel Plant at Detroit Nears Completion

ON MARCH 29, power shovels and dump trucks began work on a site near the outskirts of Detroit. Two months later mill buildings to house the unique plant of the Rotary Electric Steel Co. (Michigan) had been completed as well as many foundations for the equipment. The seven rotors for casting 7 x 7-inch blooms of nondendritic steel are shown in a partially-erected condition. This equipment is indicative of the radical difference between orthodox and rotary casting methods for securing homogeneous steel. A rotor being lowered into its operating pit, and before the coping is placed, is shown at the left. Cold drawn bars of standard analyses will be the initial commodity of this grade of steel produced and marketed by the company. The plant will have an estimated monthly capacity of 7500 to 10,000 tons.



dustry. Codes being adopted by individual groups will be in the nature of complements to this master code. The first code to be presented, that of the Soil Pipe Manufacturers association, has been temporarily shelved, it is understood, for one reason because it included a reference to prices.

Meanwhile, numerous branches of the industry are moving to comply with the recovery act.

The American Manganese Producers association this week, in Washington, is expected to approve the code drafted last week by the executive committee at a meeting in New York.

Name Committee on Gears

The American Gear Manufacturers association has nominated E. S. Sawtelle chairman of a commercial standards committee to draft a code to cover gears and pinions. E. P. Connell is chairman of the speed reducers groups, which has been broken down into subcommittees for helical and herringbone speed reducers, worm gear speed reducers, and planetary speed reducers.

Representatives of 60 firms in the steel plate fabricating industry formed the Steel Plate Fabricators association at a meeting in Chicago. The organization will proceed immediately to draw up a code of fair practice. The following officers were elected:

President, Merle J. Trees, Chicago Bridge & Iron Works, Chicago; vice president, W. H. Jackson, Pittsburgh-Des Moines Steel Co., Pittsburgh; treasurer, A. O. Miller, Petroleum Iron Works Co., Sharon, Pa.; directors, R. I. Ingalls, Birmingham Tank Co.; E. N. Gosselin, Graver Tank & Mfg. Corp.; Bryan Blackburn, R. D. Cole Mfg. Co.; W. W. Perkins, Bartlett-Hayward Co.; C. M. Denise, McClintic-Marshall Corp.; C. E. Patton, Alco Products Inc.; H. A. Fitch, Kansas City Structural Steel Co.; V. P. Marran, Walsh Holyoke Steam Boiler Works; H. C. Tallerday, Western Pipe & Steel Co.; W. Taylor, Consolidated Steel Corp.; W. J. Wyatt, Myatt Metal & Boiler Works; and L. A. Paddock, American Bridge Co.

Joining Scrap Institute

Twenty new applications for membership are reported by the Institute of Scrap Iron and Steel, which plans to represent the scrap industry in framing a trade code. A membership campaign is being conducted and some dealers who withdrew from the institute may reunite, at least temporarily, in the interest of broad representation at Washington.

Directors of the American Oil Burner association have been empowered to present a recommended code to General Johnson.

Basic Principles For Trade Codes

BASIC principles which will guide the national recovery administration in considering codes of fair competition have been announced by Gen. Hugh S. Johnson, administrator. These principles follow:

(1) This bulletin is intended to inform all trade associations, industrial and labor groups how to proceed to secure the benefits of the National Industries Recovery act. In his statement upon the signing of the act, the President said with reference to prompt submission of codes of fair competition.

This organization is now prepared to receive proposed codes and to conduct prompt hearings looking toward their submission to me for approval. While acceptable proposals of no trade group will be delayed it is my hope that the 10 major industries which control the bulk of industrial employment can submit their simple basic codes at once and that the country can look forward to the month of July as the beginning of our great national movement back to work.

This bulletin covers the procedure necessary to comply with the President's suggestion.

(2) The national recovery administration will receive proposed codes at any time after this date at its office in the department of commerce building, Washington. Codes may be submitted by mail and will be promptly examined and associations or groups submitting them will be given such suggestions as are appropriate for further action. Consistent with the President's statement, the major industries will so far as practical have the first attention of the Administrator.

As soon as the proposed code is put in proper form, after consultation with those submitting it, due public notice will be given of a date for a hearing on the code, and at such hearing a reasonable opportunity to be heard will be given to all interested parties, including all affected labor groups, and representatives of consumer organizations, the trade associations or groups submitting codes and any essential minority thereof, other concerns not members thereof, and persons engaged in other steps of the economic process whose service and welfare might be affected by the approval of the proposed code. This hearing will be held by a person designated by the Administrator and there will be present, to advise that person, experts in the industry under consideration and the labor pertaining thereto, who will be chosen under the supervision of the Secretaries of Commerce and Labor, respectively. All other persons or concerns whose cooperation is desirable in connection with the proposed code shall be entitled to attend such hearings.

(3) After such a hearing the proposed code may be modified at the suggestion of the Administration or otherwise and as so modified, if it is agreed to by representatives of the association or group presenting it and ratified by such association or group under such conditions as the Administration may prescribe, it will be presented to the President for his approval or disapproval or suggested modification, and when finally approved by the President, it shall have the effect prescribed by the National Recovery act.

(4) In order to carry out the President's suggestion as quoted in paragraph 1 and to effect an immediate reduction of unemployment and increase of mass purchasing power, trade associations or groups are invited to submit without delay a basic code covering only such agreements as are consistent with the policy of the act, respecting maximum hours of labor, minimum rates of wages, and such means as each industry may find necessary to protect its constructive and cooperating majority from the wasteful and unfair competition of minorities or recalcitrants. Additions, modifications, and refinements of such basic codes will be considered later upon application by such associations or groups.

(5) The act requires that certain provisions found in subsection (a) of section 7 shall be included in every code and therefore no application for the approval of any basic code will be received which omits or modifies these mandatory provisions, which are as follows:

Every code of fair competition, agreement, and license approved, prescribed or issued under this title shall contain the following conditions: (1) That employes shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection; (2) that no employe and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing; and (3) that employers shall comply with the maximum hours of labor, minimum rates of pay, maximum machine-load of employes, and other conditions of employment, approved or prescribed by the President.

(6) It is not the function of the national recovery administration to prescribe what shall be in the codes to be submitted by associations or groups. The initiative in all such matters is expected to come from within the industry itself. Neither is it the purpose of the Administration to compel the organization of either industry or labor. Basic codes containing provisions respecting maximum hours of labor, minimum rates of pay, and other conditions of employment, which are in themselves satisfactory, will be subject to approval, although such conditions may not have been arrived at by collective bargaining.

(7) In preparing basic codes, the fol-

(*Please turn to Page* 63)

Chemical Engineers Meet

American Institute of Chemical Engineers opened its silver anniversary convention in Chicago, June 14. A three-day meeting was scheduled with about 300 members in attendance. The program covered a review of progress made in the chemical engineering industry during the past 25 years.

Payroll Best in 2 Years

A $500,000 payroll, which was the largest in two years, was distributed June 14 and 15 among several thousand steelworkers at the Weirton Steel Co. plant, Weirton, W. Va.

Carnegie Tow Goes South

Carnegie Steel Co., Pittsburgh, made up a tow of steel products for southern ports which left Pittsburgh plants last week.

WINDOWS OF WASHINGTON

Cabinet Checks "Dictators"

◆ ◆ ◆

Public Works To Be Spoils?

◆ ◆ ◆

Labor Planning To Unionize

WASHINGTON

MESS . . . A confused, inharmonious or disagreeable mixture of things; a medley; a hodgepodge—Webster. A horrid word, but exactly what the government is in now.

In the barnlike outer offices and the corridors of Gen. Hugh S. Johnson's wing of the department of commerce building scores of representatives of industry daily are milling about, seeking advice concerning the industrial recovery act.

In the inner offices, deputy administrators and other members of the Johnson staff, most of them equipped only with a desk, several chairs, a copy of the act and a supply of government scratch pads and pencils, are struggling 18 hours a day to accommodate all visitors and settle down into some semblance of organization.

A scant mile away, in the department of the interior building, Col. Donald H. Sawyer and his temporary public works section are bracing themselves against successive waves of delegations, representing important cities and states, all in a ferment over pet projects and programs for which they solicit government loans.

Smaller rings of the big show, but proportionately as active, are being run by Railroad Co-ordinator Eastman, Tennessee Valley Administrator Morgan, Home Loan Director Stephenson, Farm Relief Director Peek and Direct Relief Administrator Hopkins.

At London, the American delegation to the world economic conference appears to have gone haywire, with Assistant Secretary of State Moley proceeding to London with the latest personal views of the President. Meanwhile, Bernard M. Baruch has become a superadviser—a new gradation in the state department.

In the treasury, Secretary Woodin and Budget Director Douglas are attempting to juggle new taxes, the budget and inflation, and to determine how far the United States can go in refusing to stabilize the dollar until commodity prices have climbed to 1926 levels—and still remain the "good neighbor" which the President promised in his inaugural address.

Cabinet members, aroused by the inroads of co-ordinators and administrators, have risen and regained their supremacy. Secretary of Commerce Roper heads a committee which is toning General Johnson down, while Secretary of the Interior Ickes is sitting on the public works lid.

It has not clarified the atmosphere to have General Johnson's labor advisory board, loaded with representatives of organized labor, take him to task for growing too lenient in application of the collective bargaining clause of the act.

Congress having adjourned, the patronage barrel has been officially opened. In every department, the new secretaries and assistant secretaries are scanning lists of personnel, and there is scarcely a holdover employe, even including many under civil service, who is not apprehensive. Employes have not been so unsettled since 1920.

Even some of the mouselike employes of the library of congress, paid as little as $65 a month and long regarded as immune to political turnover, are threatened with replacement. So numerous have job seekers become in General Johnson's headquarters that large placards, stating that no more applications will be received, have had to be posted there.

It is estimated that fully 25,000 new government employes will be required for the administration of the new agencies, and that almost a thousand new offices will be opened in Washington by trade associations or their representatives. One new employe in the department of agriculture is a southern ex-governor, drawing $10,000 for what amounts to a newspaper clipping job.

So, while the President is away on a vacation which no one begrudges, Washington boils. There is no serious doubt but that the new setups will shake down shortly, and a pump always squeaks while it is being primed, but for the time being the government literally is in a mess.

PLANS of General Johnson both as to organization and procedure have undergone considerable refinement. His organization, briefly, is this:

Designated his chief counsellor for industry is Dudley Cates, a Chicago insurance man; his counsellor for labor, Edward F. McGrady, a legislative representative for the American Federation of Labor; chairman of his advisory board, Dr. Leo Wolman, of Columbia university; and chief of his research and planning division, Dr. Alexander Sachs, economist of the Lehman Corp. of New York.

Sitting on the labor advisory board, in addition to Dr. Wolman, are William Green and John P. Frey, of the American Federation of Labor; Joseph Franklin, president of the international boilermakers' union; Sidney Hillman, president of the Amalgamated Clothing Workers; Father Francis Haas, of the Catholic Welfare council; Rose Schneiderman, secretary of the women's trade union league; John L. Lewis, president, United Mine Workers; and George L. Berry, president, International Pressmen's and Assistants' union. These are selections of Secretary of Labor Perkins.

On the industrial advisory board, named by Secretary Roper, are Gerard Swope, president of General Electric; A. P. Sloan Jr., president of General Motors; Edward N. Hurley, chairman of the Hurley Machine Co.; Austin Finch, a chair manufacturer

of Thomasville, N. C.; William J. Vereen, a Moultrie, Ga., cotton manufacturer; Walter C. Teagle, chairman of Standard Oil of New Jersey; and Louis Kirstein, Boston department store executive.

Deputy administrators include W. L. Allen, former director of American Rolling Mill Co.; Prof. Earl D. Howard, of Northwestern university; Gen. C. C. Williams, former chief of ordnance; A. D. Whiteside, president of Dun & Bradstreet's; K. M. Simpson, president of the International Chromium Process Corp.; and Nelson Slater, a cotton and rayon textile manufacturer.

Within a few days a consumers' advisory board, to represent the buying public, will be named.

IF THE procedure in the textile industry—first to submit a trade code—sets a precedent, codes will be made public when submitted to the Johnson organization and hearings on them will be open. The gauntlet for a code will be something like this:

Being filed, it is assigned to a deputy administrator. These deputies, General Johnson explains, "will not be assigned to preside over a particular industry and none will participate in the hearing of the code of any industry in which he has an interest." Thus there will be no steel administrator.

But the deputy to which a code is assigned will be flanked by three persons vitally concerned in and acquainted with the affected industry—a representative of labor, the industry and the public.

It thus becomes a fair assumption that the labor man who will pass on the iron and steel codes will be Mr. Frey, head of the metal trades branch of the American Federation of Labor, while Mr. Hurley will probably be the representative of industry, but with Messrs. Sloan and Swope possibilities.

A code having been agreed upon, it will be submitted by General Johnson to the President for approval. The textile hearing being set for June 27 and to continue until July 1, it probably will be the first week of July before the first code receives the White House stamp of approval.

Soil Pipe Manufacturers' association, first iron and steel group to submit a code, proposes a 30-hour week, with a minimum daily rate of $2.75 in southern plants and $4.25 elsewhere. Wages in southern plants now are $1.25 to $1.85, and in the North $2.50 to $3.

The association says that under normal conditions 12,000 persons are employed in this industry, but at present only 3500 are engaged, and 2500 more are in prospect. Consideration of the Soil Pipe code may be deferred until the American Iron and Steel institute code has received approval.

WITH the President away, General Johnson has become the "biggest man" in Washington today. Not even during the early days of the World war was one man so dominant.

Twice a week the general sees the press. President Roosevelt set a new high record for the White House when he drew over a hundred to the first few conferences immediately following his inauguration, but General Johnson draws fully 150. It should be understood, of course, that at present both the President and congress are away, and the general has the whole stage to himself.

Take the conference of last Tuesday as typical. The correspondents assemble in a conference room in the department of commerce building; General Johnson enters, patently weary and flanked by two assistants and a stenographer; he perches himself on a corner of a long table and announces he is open to questions—and the bombardment is on.

"We are going to prevent this organization becoming great in size. . . Of course, the major problem is to try to get people back to work. If we can do that, we can get out of the hole we are in. . . I believe we are going to put many millions back to work this summer. Anything may happen, but I just want to say that it looks very promising. . . I would like to have industry together in the largest groups possible because they are easier to handle. . . Everyone will be allowed to be heard before a code is adopted. Everything will be done in an open hearing; every interest that has a word to say will have its day in court. . . This job must be done in a goldfish bowl. . . Where there is a difference in the economic structure, where wages in a small town are justifiably lower than in a large city, that we cannot disturb. . . The request of the railroads for a cut in wages doesn't fit in at all; it is not my baby, but something must be done to co-ordinate. . . We are going to ask something in the nature of an armistice on increasing producing capacity until we see if we can get this upward spiral started. . . We are going to plead very earnestly with industries not to use any further labor-saving devices or anything further to increase production. . . This administration is not to be used for unionizing any industry. . . If the men organize, that is alright. My job is to sit here in an impartial way. I have no initiative in this thing. This law has given men the right to bargain collectively. There is no argument. I have a law to execute and I am going to execute it."

Meanwhile, General Johnson has been subjected to the most searching photographing. A dozen news photographers, their camers equipped with flashlight bulbs, snap the general from every angle, even from within two feet of him, with the general not even recognizing any interruption. A half hour of questioning and photographing over, the general rises from the table and the conference is over.

RARELY in the course of any administration—let alone a Democratic one—is a three billion dollar pork barrel opened, and the new administration is making the most it.

Politics first came into the open when the President, on the verge of leaving for his sailing trip to New Brunswick, named Colonel Sawyer temporary administrator of the public works section.

It had been taken for granted that Col. George R. Spalding, a rivers and harbors engineer, would be the General Johnson of public works. In fact, he was preparing a slate of state administrators—44 of them—with the general view of efficiency, there being a liberal sprinkling of army officers.

But when "the hill," as Washington terms congress, heard of this it protested, and at the last minute the President shoved Colonel Sawyer into the breach. The permanent head will not be known until the President returns, nor will state administrators be appointed until then.

These 44 proconsuls will largely decide upon the personnel of an organization which is to spend about two billions for public works—the rest of the $3,300,000,000 to be for highways, naval construction, the treasury building program, and other projects largely earmarked. They will collectively hand out the largest construction contracts on record.

These 44 will have the backing of the Democratic organizations in their states, it is understood.

A BREAKDOWN of the iron and steel requirements of the $3,300,000,000 public works program is difficult until the details of the projects are clarified.

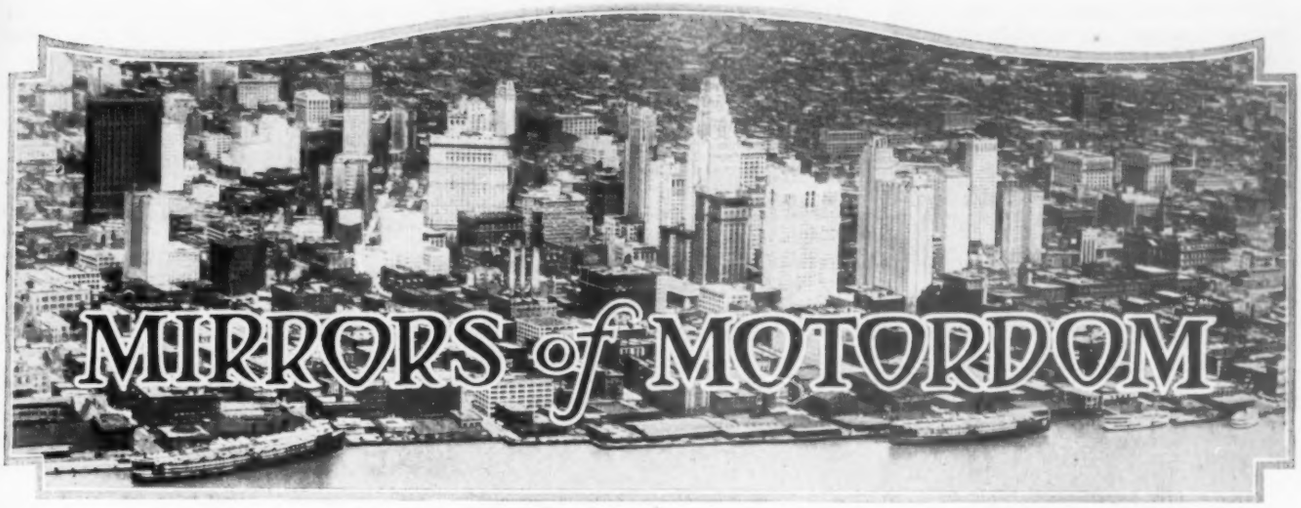
For highways within the states $400,000,000 is set aside, and for highways within reservations and public lands $50,000,000. The steel tonnage of reinforcing rods and mesh and of structural steel for bridges is roughly estimated at slightly over 400,000.

The naval construction program, for which $238,000,000 is to be available, will account for slightly over 75,000 tons. Bids will be opened July 26 on 17 vessels to be built on private ways. These ships and the steel required are:

Two aircraft carriers, 11,000 tons each; 1 light cruiser, 7000 tons; 4 destroyers, 800 tons each; 7 destroyers, 700 tons each; 2 submarines, 700 tons each; 1 cruiser, 7500 tons—a total of 46,000 tons.

The 15 vessels to be allocated later to navy yards, and their steel requirements, are: 2 cruisers, 7000 tons each; 9 destroyers, 800 tons each; 2

(*Please turn to Page* 46)



2,000,000-Car Year Possible

◆ ◆ ◆

Dies for New Models Near

◆ ◆ ◆

Unionization Is Threatened

DETROIT

IF THE last half year can average a few more than 150,000 cars a month, or about two-thirds of the June rate, 1933 will be a 2,000,000-car year, and it begins to look as if it can be done.

Assuming May and June assemblies, for which no official statistics are yet available, to aggregate 450,000 units, first half year production will stand at 986,000 units. This leaves a mathematical average of 169,000 cars a month from July to December to reach the goal.

Normally, the first half year accounts for 60 per cent of production, and on this basis 1933 would be put down for 1,600,000 cars. July and August usually are slack months, September and October bring a mild fall rally, then runs on current models end and there is a hiatus until new lines are put in production in December.

But this year the retail market did not open in January; it was delayed until late in April. For the first time in 11 years, June output is topping May. Material releases forecast the smashing of another precedent, with July probably equaling June.

The great bulk of automobile buying this year has been financed by funds released by the subsidence of fear. Data of manufacturers with scattered assembly plants show that the bulk of demand has originated in the East, but now as eastern assembly plants begin to ease off a little, western and southern demand is rising to fill the gap.

This improved demand is bearing out the forecasts of some automotive executives that the West would not buy cars until wheat had crossed 70 cents, corn 50 cents, and other farm products proportionately. Chances are that western and southern buying will expand over the summer.

Most workmen who were re-employed in the spring have not yet reached the automobile buying stage. Some entered the market promptly, but the majority will not be in until the early fall. In the meanwhile, wages are advancing and the government's industrial recovery program is predicated on getting a million men at work by early fall.

Banking on July being as good a production month as June, the 7-month total will be about 1,211,000 cars. This would lower the average for the remaining five months to 158,000 in order to make 1933 a 2,000,000-car year. Even in good times too much reliance would not be put on November and December, and August, September and October business will turn the tide.

With August still obscure but probably a strong month seasonally, it appears that sometime in the first ten days of that month production for 1933 to date will equal that for all 1932, or 1,370,678 units.

TO SOME extent the showing of the last half year will hinge upon decisions concerning new models. Up to the past month or so, many of the changes in design in the past two years cannot be said to have been tested in stimulating demand.

Fender valances, automatic clutches, sloping radiator shells, the trend toward so-called streamlining are advances which the automobile public has possessed vicariously. There are some who believe that current design, with perhaps the addition of an automatic transmission, could be extended into another year.

However, some die and tool shops have been looking for new model work to develop in late August which normally would not be out before September or October. In fact, it is reported that Buick has just placed some die work with shops in Detroit and Toledo, and that Nash any day will release a die program.

Studebaker is another manufacturer with a die program just ahead—provided the receivers assent. Recent releases on many parts are considered cleanups on the current model, and preliminary work on a new line has been concluded, but whether receivers will be as free as executives in laying out funds for a change remains to be seen.

Auburn, which has practically cleaned up its stock of current models and has worked off its inventory by cutting the price of its models sharply, has been only awaiting the formal assent of Mr. Cord before putting something new on the line.

For one thing, Auburn in its new line will adopt fender valances and will bring its rear body panel over to cover the gas tank. Studebaker and at least one Chrysler line are likely to go to an automatic gearshift, but it is possible that Reo's introduction of this mechanism may mature the experimental work that General Motors as well as most other makers have been doing in this direction.

ON THE horizon is one cloud which might dim the production situation. It is the attempt that will be made to unionize the automobile industry.

While the industrial recovery administration at Washington is blunt in declaring that it will not be the instrument for organizing any industry, it also points out that it will be guided by the law, and an invitation to automotive labor to join a union presumably could not be prohibited.

If the American Federation of Labor has not already set up a headquarters in Detroit, it will shortly. At the outset, horizontal unions are contemplated; all employes of a

plant will be marshaled into one group. Later, a breakdown into skilled and semiskilled unions is planned.

The Federation feeling against the automotive industry is even greater than against iron and steel. Officials feel that much of the Briggs strike trouble in February could have been averted if the strikers had been able to turn to the Federation instead of to communists for advice.

Officials of the automotive industry met in Detroit last week to draft a code of trade practice for submission to Washington. Heretofore the industry has resisted successfully every attempt to unionize it.

Steel Exports 23 Per Cent Over April; Imports Decline

EXPORT trade in iron and steel products in May, totaling 123,069 gross tons, was largest since October, 1930, when it reached 131,845 tons, according to the bureau of foreign and domestic commerce.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1933		1932	
	Imports	Exports	Imports	Exports
Jan.	21,892	56,720	31,053	40,660
Feb.	19,748	63,936	26,738	40,492
March	22,114	80,567	41,031	49,927
April	28,061	100,395	35,935	58,086
May	26,295	123,069	39,751	80,477
5 mo.	118,110	424,687	174,508	269,641
June	.....	.....	34,494	52,081
July	.....	.....	18,005	52,558
Aug.	.....	.....	23,623	32,955
Sept.	.....	.....	29,241	36,038
Oct.	.....	.....	33,693	41,226
Nov.	.....	.....	34,924	56,041
Dec.	.....	.....	29,390	54,118
Total	.....	.....	378,282	594,691

May exports exceeded those of May, 1932, by 42,592 tons, or 53 per cent. Increase of 15,604 tons in shipments of scrap and 7065 tons in other iron and steel products caused this upward movement. Gains were made in barbed wire, welded galvanized steel pipe, galvanized steel sheets, sheet piling and window frames and sashes.

Imports, at 26,295 tons for May, showed a decline of 1766 tons from April, ending the two-month climb in March and April. Compared with May, 1932, total imports were only about two-thirds.

Exports for five months of 1933 reached the total of 424,687 tons, which is 155,046 tons above the corresponding period of 1932. Enlarged shipments of scrap alone would more than account for this gain, but there were gratifying increases in tin plate, heavy steel rails, seamless casing and oil line pipe and other lines.

Imports for the first five months of 1933 totaled 118,110 tons, about two thirds of the 174,508 tons imported in the same period in 1932. Important reductions in imports of concrete reinforcement bars, pig iron, merchant steel bars, structural shapes and sheets had an important part in this change.

Gain in exports in May over April was 23 per cent. The upward movement has been continuous for six months. Japan was the best market in May, with purchases of 75,535 tons, of which 73,516 tons was scrap, 817 tons tin plate and 450 tons wire rods. Italy was second with 7793 tons, of which 7565 tons was scrap. Canada was third with 7071 tons, well diversified.

ORIGIN OF MAY IMPORTS

Gross Tons

	Pig iron	Manganese ore	Ferro-manganese
Germany	100	.....	.....
Netherlands	1,683	.....	.....
United Kingdom	4,050	.....	.....
Canada	425	.....	2,096
British India	3,290	.....	.....
Cuba	.....	3,244	.....
British Malaya	.....	2,271	.....
Norway	.....	.....	1,715
Total	9,548	5,515	3,811

	Sheets, skelp and sawplate	Structural shapes	Steel bars	Hoops and bands
Belgium	386	1,562	668	652
France	2	461	37	172
Japan	3	.....	.....	.....
Germany	21	44	315	299
Sweden	1	.....	58	2
Canada	4	.....	1	1
United Kingdom	.....	46	19	5
Czechoslovakia	.....	.....	1	.....
Total	417	2,113	1,099	1,131

UNITED STATES IMPORTS OF IRON AND STEEL PRODUCTS

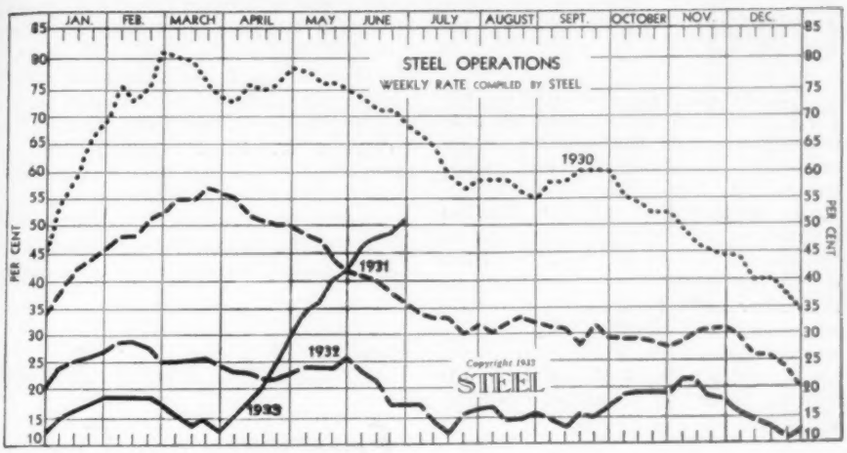
Gross Tons

Commodity	May, 1933	April, 1933	May, 1932
Pig iron	9,548	17,875	16,819
Sponge iron	52	10	.....
Ferromanganese, spiegeleisen	3,811	2,223	3,047
Ferrochrome	.....	16	22
Ferrosilicon	.....	.....	12
Other ferroalloys	.....	.....	100
Scrap	4,370	149	1,950
Steel ingots, blooms, etc.	17	21	34
Concrete bars	371	150	4,508
Hollow bar, drill steel	57	94	54
Merchant steel bars	1,099	951	2,076
Iron slabs	.....	.....	.....
Iron bars	77	18	22
Wire rods	961	542	388
Boiler and other plate	27	16	9
Sheets, skelp, saw plate	417	812	1,975
Tin plate	21	35	392
Structural shapes	2,113	1,920	2,905
Sheet piling	.....	94	.....
Rails and fastenings	312	63	513
Cast iron pipe, fittings	87	164	.....
Welded pipe	243	111	252
Other pipe	80	159	382
Barbed wire	445	456	909
Round iron, steel wire	137	244	183
Telegraph, telephone wire	.....	.....	5
Flat wire, strip steel	87	46	85
Wire rope, strand	117	145	217
Other wire	108	261	69
Hoops and bands	1,131	1,031	1,989
Nails, tacks, staples	485	323	751
Bolts, nuts, rivets	34	37	10
Horse, mule shoes	25	22	1
Castings, forgings	63	73	72
Total	26,295	28,061	39,751

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Commodity	May, 1933	April, 1933	May, 1932
Pig iron	88	339	191
Ferromanganese, spiegeleisen	1	.....	.....
Iron and steel scrap	89,328	73,719	45,000
Ingots, blooms, billets, slabs, sheet bars	172	245	690
Bars, iron	32	36	84
Bars, steel	1,516	1,593	1,227
Bars, alloy steel	197	105	161
Wire rods	532	1,488	1,048
Boiler plate	36	6	142
Other plate, not fabricated	574	221	670
Skelp, iron or steel	1,102	512	4,200
Iron sheets, galvanized	134	40	98
Steel sheets, galvanized	2,958	2,178	2,194
Steel sheets, black	2,290	1,572	5,091
Iron sheets, black	104	132	296
Strip steel, cold rolled	720	333	590
Hoop, band, and scroll iron or steel	986	769	1,618
Tin, terne plate	4,189	3,501	2,212
Water, oil, gas, other tanks, except lined	7	104	72
Shapes, not fabricated	686	680	1,285
Shapes, fabricated	758	1,173	969
Plates, fabricated	271	7	63
Metal lath	48	100	114
Frames, sashes and sheet piling	810	74	388
Rails, 50 pounds	1,252	2,032	1,106
Rails, under 50 pounds	110	.....	65
Rail fastenings	90	121	105
Switches, frogs, crossings	20	22	24
Railroad spikes	48	31	94
Railroad bolts, nuts	13	17	33
Boiler tubes, seamless	226	285	104
Boiler tubes, welded	25	5	11
Casing and oil-line pipe, seamless	3,724	3,021	2,018
Casing and oil-line pipe, welded	130	88	31
Seamless black pipe, other than casing	79	54	27
Malleable-iron screwed pipe fittings	193	127	245
Cast-iron screwed pipe fittings	51	49	60
Cast-iron pressure pipe, fittings	608	303	113
Cast-iron soil pipe, fittings	219	69	267
Welded black steel pipe	868	610	1,047
Welded black wrought-iron pipe	37	77	315
Welded galvanized steel pipe	1,747	826	1,459
Welded galvanized wrought-iron pipe	12	21	134
Riveted iron or steel pipe and fittings	5	8	32
Plain iron or steel wire	337	299	348
Galvanized wire	552	268	348
Barbed wire	2,688	1,034	1,601
Woven-wire fencing	67	77	131
Woven-wire screen cloth	37	42	67
Wire rope	112	141	135
Other wire and manufactures	256	251	168
Wire nails	668	431	496
Horseshoe nails	36	21	47
Tacks	27	33	44
Other nails, staples	257	167	225
Bolts, machine screws, nuts, rivets, washers	264	282	205
Iron castings	97	94	242
Steel castings	48	28	151
Car wheels, axles	222	228	285
Horseshoes	2	23	1
Iron, steel forgings, n.e.s.	403	283	290
Total	123,069	100,395	80,477



Pittsburgh, Chicago, the East Put Steel Rate Up to 51%

FOR the first time since early 1931, steelworks are operating at more than half of capacity. The 50 per cent market was crossed about the middle of last week, the average for the entire week being a strong 51 per cent, with indications of a further gain of several points this week.

Pittsburgh, Chicago and eastern Pennsylvania mills all improved 5 points last week, going to 41, 50 and 33½ per cent respectively. Buffalo made a big stride of 11 points, reaching an average of 48 per cent. New England mills gained 10½ points to 81½ per cent. Wheeling mills were unchanged at 84 per cent, Birmingham at 50 and Youngstown at 52.

This week, mill schedules indicate a gain of 2 points each at Wheeling and Youngstown and 1 point at Pittsburgh. New England, however, will drop back 7 points.

Details for various districts follow:

Chicago

Steel ingot production reached 50 per cent the past week, a gain of 5 points. Addition of open-hearth furnaces has been more rapid than anticipated and although future gains are expected to be somewhat more moderate, no early decrease is in prospect. Blast furnace operations have been increased to 11 active steelworks stacks out of 36 through the lighting of one stack by the Inland Steel Co. One merchant unit continues in blast.

Cleveland

Steelworks operations here, including Lorain, O., for the week ended June 24 averaged 79 per cent, unchanged from the preceding week. Corrigan, McKinney Steel Co. lighted its thirteenth open hearth in midweek, while Otis Steel Co. continued with seven. Twelve units were in operation, but one or two of them were down for several days for repairs. One more open hearth in Cleveland will be lighted this week. Another blast furnace was blown in at Lorain last week, and the Corrigan, McKiney company here is preparing to light its fourth stack.

Pittsburgh

For the second consecutive week, steel ingot operations in the Pittsburgh district advanced 5 points and as of June 23 steelmaking operations were at 41 per cent. Late last week 85 out of 201 open hearths were active at six plants of two leading producers here, an increase of six. Operations of two leading producers here averaged last week between 40 and 45 per cent. Four large 275-ton open hearths at one works continue active. Three steelworks blast furnaces were blown in here last week—a second Duquesne June 21, a third Braddock furnace late in the week, and a Monongahela stack of National Tube June 19. There are now 18 out of 53 steelworks blast furnaces in blast here, compared with 8 of 53 in the third week of June, 1932. At Johnstown, Pa., Bethlehem blew in one a Cambria stack making three of seven in blast there. For this week, steel ingot operations are likely to expand 1 point to 42 per cent.

Youngstown

Steel operations here last week averaged 52 per cent, unchanged, and ended the week on a 54 per cent basis, which is expected to continue at this week's start. Forty-four of 83 open hearths are melting, and three active bessemer plants have increased their output. Schedules still are fairly well geared to incoming business and no wide variations are likely in the next few days. Carnegie Steel Co. district plants, at 68 per cent, are leading the large producers.

Detroit

Steel production here holds at 38 per cent, the six Great Lakes open hearths being active and the 10 Ford furnaces being idle.

Eastern Pennsylvania

Steelmaking operations along the central eastern seaboard have been stepped up about 5 points to 33 to 34 per cent. These operations in some cases are in excess of imme-

Operating Rate of the Steel Industry, by Weeks

All figures except the monthly open-hearth and bessemer ingot totals of American Iron and Steel institute are percentages. Estimates are based upon reports from Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Buffalo, Wheeling, Worcester and Detroit districts, which are weighted. Weeks end Saturday.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	Steel's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.....	22	25	26	27	28.5	25.7	1,484,991	26.41
Feb.....	28.5	27	25	25	....	26.4	1,481,253	27.40
March....	25	25.5	24.5	23	....	24.5	1,433,337	24.55
April.....	23	22	22	23	24	22.8	1,259,629	22.40
May.....	24	24	25.5	23	....	24.1	1,125,243	20.01
June.....	21	17	17	17	....	18.0	912,757	16.23
July.....	14.5	12	15.5	16.5	16.5	15.0	806,722	14.92
Aug.....	14.5	14.5	15.5	14.5	....	14.7	846,730	14.50
Sept.....	13.5	15.5	15	17	....	15.3	991,858	17.64
Oct.....	18	19	19.5	19.5	19.5	19.1	1,087,058	19.33
Nov.....	21	21	19	17.5	....	19.6	1,032,221	18.36
Dec.....	16	15	14	12	13	14.0	861,034	15.31
1933								
Jan.....	15.5	17	18	19	....	17.4	1,030,075	18.23
Feb.....	19	19	19	17	....	18.5	1,086,867	20.83
March....	15	13.5	15	14	15.5	14.6	909,886	15.50
April.....	17.5	20.5	25	29	....	23.0	1,362,856	25.08
May.....	33	36	40	43	....	38.0	2,001,991	34.11
June.....	47	48	49	51	....	....	.....	....

diate needs, producers expecting an early advance in their labor charges.

Buffalo

Steelworks operations reached the peak since May, 1931, when at the middle of last week they reached 48 per cent. Indications are that this rate will hold into the beginning of this week. Seventeen open hearths are active.

Wheeling

Steel ingot production in the Wheeling, W. Va., district ran through last week unchanged at 84 per cent. There were 26 of 33 open hearths on in the district, several of which are of large capacity. This week, the rate will be 86 per cent of capacity when one more open hearth is added, thus making 27 of 33. The inactive six open hearths are small.

New England

Ingot operations reached 81.5 per cent last week but are expected to fall back to 74.8 per cent at the beginning of this week. There is no reduction in open hearths operating but there is some decline in melting at one works.

Birmingham

With 11 open-hearth furnaces active, eight at Fairfield and three at Gadsden, production here remains at about 50 per cent.

Canada

Operations of the Sydney steel plant will now proceed at between 50 and 60 per cent for the balance of the year, according to Sir Newton Moore, president of the Dominion Steel & Coal Corp. He said this estimate had been based on orders already booked, including one for 50,000 tons of steel rails received through the Dominion government.

Steel Co. of Canada will light a blast furnace at Hamilton, Ont, July 1.

Sheet Sales and Output Increased Sharply in May

Sheet sales in May averaged 4651 net tons daily, up from 3953 tons in April, according to the National Association of Flat Rolled Steel Manufacturers, Pittsburgh. Production averaged 4506 tons, compared with 3731 tons in April; and shipments, 3844 tons, against 3345 tons in April. Total sales for May were 144,192 tons; production, 139,696 tons; and shipments, 119,159 tons.

Unfilled tonnage as of June 1 was 136,592 tons; on May 1 it was 111,311 tons. Total sheet capacity in the United States for May was approximately 550,000 tons, and capacity on which the association's figures are based was 325,000 tons.

Died:

MATTHEW F. ROBERTS, 67, for many years general purchasing agent of the Atlantic Refining Co., Philadelphia, and well-known in iron and steel circles, while playing golf at the Marion Cricket club, near Philadelphia, at the annual outing of the Steel Club of Philadelphia, June 19. He was a brother of T. G. Roberts, assistant sales manager of the Philadelphia offices of the Jones & Laughlin Steel Corp., Pittsburgh, and had been affiliated with the Atlantic company 51 years.

□ □ □

Jacques J. Stein, 44, president, Stein Steel & Metals Corp., Atlanta, Ga., June 10.

□ □ □

Louis C. Thrane, 72, for 35 years associated with the Thrane Sheet Metal Mfg. Co., Omaha, Neb., June 1.

□ □ □

Eugene S. Simons, president, Pittsburgh Reflector Co., Pittsburgh, manufacturer of scientific lighting equipment, at Wilkinsburg, Pa., June 20.

□ □ □

L. G. Aldrich, 40, in charge of the Chicago office of the Landis Tool Co., June 10. Previous to going with the Landis company five years ago he was with the International Harvester Co.

□ □ □

Oliver Gogue, 82, secretary to the late David G. Reed, at Anderson, Ind., recently. At one time a vice president of the Rock Island railroad, he became associated with Mr. Reed, who with William B. Leeds, did so much to build up the domestic tin plate industry.

Foundrymen Elect, and Confer Honors

THE annual business meeting of the American Foundrymen's association, held Thursday afternoon at the Stevens hotel, Chicago, in connection with the thirty-seventh annual convention, was devoted to election of officers and conferring of honors.

Frank J. Lanahan, president, Fort Pitt Malleable Iron Co., Pittsburgh, was elected president, and Dan M. Avey, editor of *The Foundry*, Cleveland, was made vice president. The following directors were elected: For 3-year terms, T. S. Hammond, president, Whiting Corp., Harvey, Ill.; R. J. Teetor, general manager, Cadillac Malleable Iron Co., Cadillac, Mich.; R. F. Harrington, metallurgist, Hunt-Spiller Mfg. Co., Boston; and J. L. Wick Jr., president and general manager, Falcon Bronze Co., Youngstown, O.; for one-year term, Dr. H. Ries, Cornell university, Ithaca, N. Y.

The Joseph S. Seaman gold medal of the association was presented to Dr. G. H. Clamer, Ajax Metal Co., Philadelphia. T. S. Hammond, retiring president of the association, was elected to honorary membership.

Other details of the convention and a report of the exhibition will be found on pages 30, 43 and 45 of this issue.

Would Unite Steel Founders on Code

STEEL Founders' Society of America, with T. H. Harvey, of the Ohio Steel Foundry Co., Lima, O., presiding, at Chicago Friday reorganized under its by-laws into eight districts, with the chairmen of each district members of a central board.

At a coalition meeting, with F. A. Lorenz Jr. chairman, the entire industry was represented to consider the national industrial recovery act. The society invited the affiliation of all steel foundries, waiving the initiation fee for the present. A code was tentatively considered, to be approved by the society board and then to be referred by each director to the consideration of his group.

Mr. Lorenz invited the co-operation and joint consideration of the general foundry industry of a code for the industry by an executive committee of three each from the steel, malleable and gray iron groups. He extended an invitation to the nonferrous branch when it is organized.

Official Steel Production in 1932 is 13,681,162 Tons

Final statistics of the American Iron and Steel institute on production of steel ingots and castings in 1932 are 13,681,162 gross tons, compared with 25,945,501 tons in 1931. The 1932 figure breaks down into 13,464,402 tons of ingots and 216,760 tons of castings.

Total production of all kinds of finished rolled iron and steel in 1932 was 10,451,088 tons, against 19,175,894 tons in 1931. For various products 1932 production figures are: Plates and sheets, 3,443,308 tons; hot-rolled strip, 1,185,184 tons; merchant bars, 1,313,896 tons; structural shapes, 937,228 tons; concrete bars, 385,605 tons; cotton ties, 37,725 tons; hoops, 42,697 tons; tin and terne plate, 2,312,815,525 pounds; and galvanized sheets, 1,237,823,723 pounds.

Complete statistics of the institute will be published in next week's issue of STEEL.

Industrial Men in the Day's News

Frank J. Lanahan, President, American Foundrymen's Association

IN business, civic affairs and charitable work, he is one of Pittsburgh's busiest men.

OFFICER or member of 50 or more business establishments, business associations, committees and clubs.

WAR service activities were national in scope, when he was chairman of the Malleable Iron Industry's Service Committee.

ACCORDING to an ancient adage, if you want to get a job done give it to a busy man. Following this advice, about 50 organizations in business, civic affairs and charities have given Frank J. Lanahan, one of the busiest men in Pittsburgh, something to do. And to cap it all, Mr. Lanahan last week was elevated from vice president to the presidency of the American Foundrymen's association, at the association's convention in Chicago.

In business enterprises, Mr. Lanahan is president of the Fort Pitt Malleable Iron Co., Pittsburgh; Davis Brake Beam Co., Johnstown, Pa.; Fort Pitt Mine Equipment Co., Jeanette, Pa.; McKees Rocks Trust Co., McKees Rocks, Pa.; chairman of the board, Auto Tite Joints Co., Pittsburgh; member of the board of directors, Warren Foundry & Pipe Corp., Wharton, N. J.; and vice president, Chartiers Trust Co., McKees Rocks.

Mr. Lanahan is a trustee of the Carnegie Institute; Carnegie Institute of Technology; Carnegie Library, and Carnegie Museum, Pittsburgh. He is a member of the board of directors in the following organizations: National Safety council, Chicago; Western Pennsylvania Safety council, Pittsburgh; Railway Business association, New York. He is chairman of the executive committee and director of the Railway club of Pittsburgh, and vice president, Pennsylvania State Chamber of Commerce, Harrisburg.

He is a member of the American Iron and Steel institute; Engineering Society of Western Pennsylvania; American Society of Safety Engineers, and American Society of Municipal Engineers.

In civic, charitable and religious affairs he is a member or on the board of directors of a dozen or more associations; is general chairman of Emergency Welfare of McKees Rocks, Stowe township; Robinson township and Kennedy townships, Pennsylvania.

With all his business connections, Mr. Lanahan finds time for social and recreational activities. He belongs to a half dozen athletic, field and country clubs in Pittsburgh and surrounding territory; is a member of the Duquesne club, Pittsburgh, and the Union League club, Chicago.

Mr. Lanahan was born and has lived continually in Pittsburgh. He attended Grant public school, Pittsburgh high school, and St. Mary's Academy, Blairsville.

His dynamic personality came into action during the World war when he was a leading spirit in many local and national organizations for war work. He was chairman of the Malleable Iron Industry's War Service committee; general chairman of the Pittsburgh Liberty loan committee, war camp community, war saving stamp, and Salvation Army committees. He served as secretary of the Pittsburgh chapter of the Red Cross; chairman of the Red Cross entertainment committee; Motor Corps and Transportation committee; and United War Work Campaign committee.

FRED O. SMITH, vice president of the Vulcan Iron Works, Wilkes-Barre, Pa., in addition to other duties has taken charge of sales of the company. Associated with the Vulcan Iron Works for over 40 years and a director in the company, he is also president of the Wilkes-Barre Iron Mfg. Co., Wilkes-Barre, a director of the First National bank of the same city, a member of the American Iron and Steel institute, and a member of the Westmoreland, the Wyoming Valley Country and the Skytop Country clubs.

□ □ □

W. S. Gain has been appointed representative in Buffalo and vicinity for the Clark Controller Co., Cleveland. His headquarters are at 416 Lafayette building, Buffalo.

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H. J. Morland has been placed in charge of tubular goods sales of the Oil Well Supply Co., Dallas, Tex., in the midwest division. He is succeed-

(*Please turn to Page* 57)

EDITORIAL

Balancing the Books for An Eventful Half-Year Period

ADJOURNMENT of congress and the approaching end of the first half of the year make this a convenient time to take stock of what has transpired during the past six months and to try to foresee what will happen during the remainder of 1933.

The broad outline of events is fairly simple. At the beginning of the year, the nation was in the hands of an administration which had been repudiated at the polls in November, yet under the constitution was obliged to carry on until March. Business, which had drifted aimlessly since a few weeks after the election, in January began to rise slowly from its year-end depths. By the third week of February, steelmaking operations—to name only one indicator—had regained all of the ground lost since the week following election.

But at this point a new and not generally anticipated factor crept into the situation. Because of threatened bank difficulties in Detroit, the governor of Michigan in the second week of February closed all banks in the lower part of the state. In spite of strenuous efforts to localize the effect of this act, it spread to other sections rapidly. On March 4, inauguration day, the demoralization was so general that the new President, within a few hours of taking oath of office, was forced to declare a national bank holiday.

Start Made from Bedrock To Build New Economic Structure on Novel Lines

Politically this dramatic event had great significance. It brought congress and the public to the bedrock of realism as no lesser happening could have done. It enabled the new Chief Executive to demand and obtain powers which otherwise would not have been granted. It paved the way for brilliant, decisive action at Washington. It provided a wonderful send off for the "new deal."

President Roosevelt made the most of this opportunity. By virtue of the emergency powers given to him, he enabled the sounder banks to resume business promptly. He introduced drastic economies in government, tackled the farm situation from a new angle, restored legal beer, placed a quarter of a million young men in forest camps, took the country definitely off the gold standard, tried to make hoarding unpopular, provided for the relief of urban home owners, moved to help the railroads, legalized machinery for administering a public works program and introduced a revolutionary plan for stimulating employment and purchasing power through the national recovery act.

Meanwhile, long before this imposing array of legislation had been acted upon in congress, business had reversed its trend. The low point following the bank holiday had been touched in the third week of March. Within a month, the losses caused by the bank difficulties had been wiped out in several important industries. April, May and June were months of steadily rising business barometers, although it should be recorded that the improvement was not uniform. Automobiles and steel, for instance, forged ahead much faster than many other industries. However, as the half-year comes to a close, the betterment daily is becoming more generally diffused throughout all industries.

Gains Now Seem Far Above Liabilities But Final Cost of Improvement Not Yet Reckoned

If we could balance the books of national activities as of June 30, taking into account only the events of the first-half, we probably would say that the assets far outweigh the liabilities. Unfortunately, while we may believe this is true, we dare not be sure of it.

We know that the nation is better off today than in the middle of March. We know that the volume of business is greater, prices are higher, employment is improving, wages are tending upward and sentiment is vastly improved. But we do not know what the cost of all this has been or will be.

When President Roosevelt assumed office, the nation as much as said, "Get us out of this mess at any cost." He has been doing so, but how much of what has been done will come back on us to plague us later? We shall not be able to balance the books until the world is restored to stability, until we are back on the gold standard and until the final outcome of the national recovery act and other great experiments is known definitely.

Everything looks bright, but we are not out of the woods. Much hard work remains to be done in the follow through on the revolutionary plans which have been set in motion. The machinery was built in the first-half; in the last half, we will see if we can make it work.

THE INDUSTRIAL DIAL

Published in the last issue of each month as part of
The Business Trend Section of STEEL

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FIVE more days of June will bring to an end one of the most eventful half-year periods in the history of American business. In the brief span of six months we have experienced emotions ranging from black despair to radiant hope and realities extending from the brink of ruin to a fair start back to business recovery.

Some time in the future, when it is possible to look back in retrospect more clearly, we may be able to arrange the elements of cause and effect in proper sequence. Perhaps time will show that the natural turning point in the depression occurred in July or August of 1932 and that the slight improvement in the fall of that year was a forerunner of further natural improvement in the first quarter of 1933, but which was interrupted by the bank troubles precipitated by the Michigan situation in February. Again, time may enable us to say whether or not it was necessary or desirable to close all banks in an afflicted state in order eventually to weed out the hopelessly involved institutions from the sound ones.

Whatever history records on these questions, the fact remains that certain important business barometers did not descend in February or March to the record lows touched in July or August. Also the rapid rise in basic industries in April, May and June was more in the character of a resumption of an interrupted movement than of a fresh start from scratch.

Thanks to the spurt in business in the quarter now closing, first-half of 1933 figures in many cases will exceed those for the first six months of 1932. In the automobile industry—one of the leaders in the recent upturn—output in the first four months already were comfortably ahead of production for the corresponding months of 1932. The outputs for May and June will increase the margin considerably.

Production of steel ingots in the first five months of 1933 lacked about 400,000 tons of equaling that for the five months of 1932. However, the indicated output for the current June will bring the half-year total to 8,500,000 tons or more, thus gaining a margin of at least three-quarters of a million tons over the production in the first-half of 1932.

Coal output, car loadings, electric power consumption, etc., while now definitely above the corresponding levels for 1932, will not compare favorably on a half-year basis. However, the margin over 1932 is increasing steadily.

Commodity price indexes in June were about 50 per cent above the low points established last February. However, the gains in prices, like those in production, have not been uniformly distributed. Improvement still is spotty, although decreasingly so.

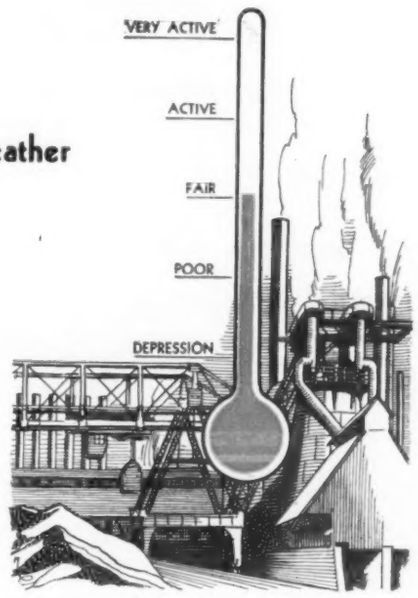
In the final reckoning, the first-half of 1933 may be remembered more for its startling legislation affecting business than for its sharp contrasts in the state of business itself. We are set for a great experiment, the outcome of which will be decided in the next year.

Where Business Stands

Monthly Average, 1932 — 100

	May, 1933	April, 1933	May, 1932
Steel Ingot Output	176.6	127.2	103.1
Pig Iron Output	123.4	87.6	106.7
Freight Movement	97.9	92.3	96.1
Building Construction	117.5	83.6	115.4
Automobile Output	188.6	150.8	161.3
Wholesale Prices	112.9	98.3	94.0

Industrial Weather



TREND:
Upward

Thumb Nail Sketches Of Business

Production of electric power has been gaining consistently since the second week of April. In the week ending June 10, the output was 7.4 per cent above that of the corresponding week last year. The 1933 trend line is interesting in that for January and February it paralleled the 1932 line, but at lower levels; in March it dropped sharply due to the bank troubles; and since April its trend has been upward—in almost an exact reversal of the downward drift during the corresponding period of 1932.

Prospect for Railroad Buying Is Brighter

Many signs point to an early improvement in equipment buying by the railroads. Freight traffic in the week ending June 17 was the heaviest since early November. Passenger traffic has improved sharply in the last few weeks. Railroad earnings are better, a number of important roads now showing a modest profit. Meantime the number of locomotives and cars requiring repairs has risen to the highest point in a decade. Less than 20 per cent of the locomotives on American roads are considered modern and 50 per cent are classed as obsolete. The condition of equipment, increased traffic and more favorable situation at Washington in regard to governmental attitude toward the carriers combine to make the prospect for early expansion of equipment purchases brighter than it has been for several years.

Why Foreign Trade Increased in May

Examination of the details of American foreign trade in May brings forth a simple explanation of the marked gains in exports and imports. Increase in imports—largest since March 1931—was due to the improvement in domestic industrial activity, requiring greater quantities of foreign raw materials. The rise in exports was caused by larger purchases abroad of American cotton. In fact, exports of other commodities dropped slightly in May.

Post Office Income Shows Good Gain

Postal receipts in 12 large cities for the week ending June 16 were $3,193,534 compared with $2,770,017 in the like week of 1932, a gain of 15 per cent. First class postage for local delivery will be reduced from 3 to 2 cents July 1.

American Public Is Buying More Shoes

A good indicator of improvement in mass purchasing power is found in the statistics of shoe production. Output in May was estimated at over 32,000,000 pairs, a record for the fifth month. The previous high point for May was in 1929 when 29,159,000 pairs were manufactured.

Demand for Oil Held Up Well in 1932

According to an analysis made by Henry L. Doherty & Co., world consumption of petroleum in 1932 is estimated at 1,317,000,000 barrels, of which gasoline was 40 per cent. Total consumption was off only 4 per cent from 1931, indicating that difficulties in the petroleum industry were due to factors other than sharp shrinkage in demand.

Ore Movement Better Than Expected

What a vigorous spurt in steelmaking will do to the movement of iron ore was illustrated in May. Consumption was nearly a half million tons greater than in April and exceeded that of any month since November, 1931. Early forecasts of the tonnage of Superior ore to be brought down this season have been revised upward sharply.

Business Gains 45 Per Cent Since March

For the week ending June 10, the weekly index of business activity compiled by the *New York Times*, registered a gain of 45 per cent over the low point touched in the week ending March 18.

Farmers Helped by Higher Prices

Increased commodity prices enabled farmers to reduce their obligations to the Federal Land Bank of Omaha by $600,000 from May 1 to June 1.

The Barometer of Business

Industrial Indicators

	May, 1933	April, 1933	May, 1932
Pig iron output (Daily average, tons)	29,249	20,786	25,282
Machine Tool Index	19.1	14.9	37.5
Unfilled orders (tons)	1,929,815	1,864,574	2,177,162
Ingot output (Daily average, tons)	74,148	54,514	43,279
Dodge Bldg. awards in 37 states (sq. ft.)	15,277,000	10,870,400	15,742,200
Automobile output	*225,000	189,284	192,505
Coal output, tons	22,600,000	19,523,000	18,384,000
Business failures, number	1,909	1,921	2,758
Business failures, liabilities	$47,971,573	$51,097,284	$83,763,521
Cement production, Bbls.		4,183,000	6,917,000
Cotton consumption, bales	620,909	470,685	333,000
Car loadings (weekly average)	531,958	460,300	521,939

*Estimated.

Foreign Trade

	May, 1933	April, 1933	May, 1932
Exports	$114,000,000	$105,000,000	$132,194,000
Imports	$107,000,000	$88,000,000	$112,275,000
Gold exports	$22,024,000	$16,741,000	$212,229,000
Gold imports	$1,785,000	$6,769,000	$16,715,000

Financial Indicators

	May, 1933	April, 1933	May, 1932
25 Industrial stocks	$118.30	$97.20	$77.94
25 Rail stocks	$31.01	$22.97	$14.16
40 Bonds	$69.74	$62.36	$57.00
Bank clearings (000 omitted)	$16,064,116	$14,663,568	$20,410,532
Commercial paper rate N. Y. (per cent)	2	2¼–3	3–3½
*Commercial loans (000 omitted)	$4,772,000	$4,706,000	$6,678,000
Federal Reserve ratio, per cent	68.0	62.6	64.4
**Railroad earnings	$19,041,789	$10,548,004	$20,273,161
Stock sales, N. Y. stock exchange	104,229,094	52,901,343	23,151,047
Bond sales, par value	$373,966,500	$271,297,200	$261,621,400

*Leading member banks Federal Reserve System.
**April, March and April, respectively.

Commodity Prices

	May, 1933	April, 1933	May, 1932	Monthly Av. 1913
STEEL's composite average of 14 iron and steel prices	$28.45	$28.16	$29.62	$26.32
Bradstreet's index	$8.02	$6.98	$6.68	$9.21
Wheat, cash (bushel)	99c	90c	72c	92c
Corn, cash (bushel)	58c	51c	46c	51c
Petroleum, crude (Bbl.)	25c	42c	90c	$2.50

Exports

May, 1933	$114,000,000
April, 1933	105,000,000
May, 1932	132,065,000

Imports

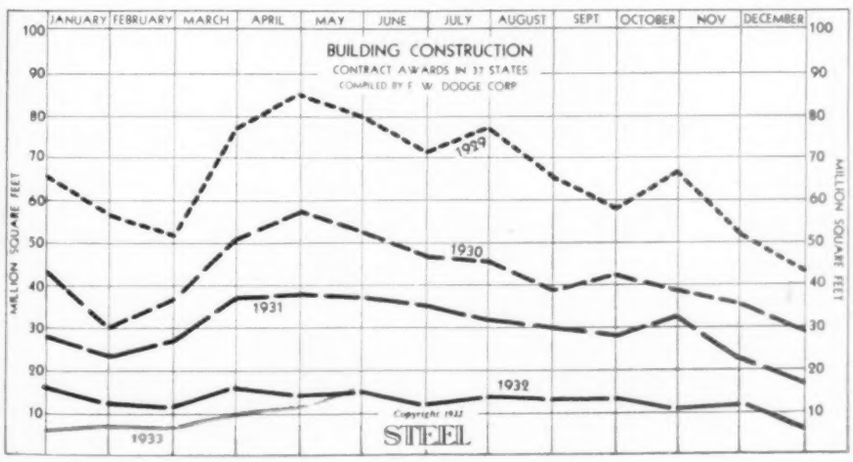
May, 1933	$107,000,000
April, 1933	88,000,000
May, 1932	112,276,000

May Foreign Trade Advances; Imports Highest Since June

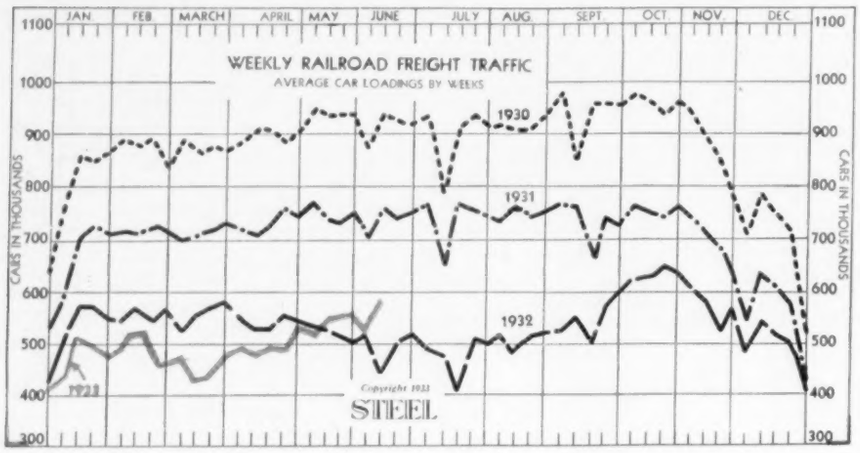
The total value of this country's foreign trade was again increased, after the slight reduction that appeared in the April report. Exports in May were valued at $114,000,000, compared with $105,000,000 in April, but considerably under the $132,000,000 reported in May a year ago. According to the bureau of foreign and domestic commerce, imports aggregating $107,000,000 were the largest since June and compares with April imports of $88,000,000. Despite the large gain shown in the import business the balance of trade continues on the export side, and amounted to $7,000,000. The sales of our goods to other countries was stimulated by expectations of rising prices here and by our currency's depreciation.

Building Construction Gains Sharply In May; Valuations Up 36 Per Cent

Building awards in 37 Eastern states, gained nearly 5,000,000 square feet of new floor space during May. According to reports of F. W. Dodge Corp., total construction for May involved 15,277,000 square feet as compared with 10,870,400 in April and 15,742,200 square feet in May, 1932. The valuation of contracts awarded in May was $77,171,700 compared with $146,221,200 in the same month last year, a decline of 47 per cent. May construction contracts of all descriptions showed a gain of about 36 per cent over the total of $56,573,000 reported during April. Increases in residential building and public utilities as compared with May last year were too small to offset declines in public works and non-residential building.



	Square Feet
May, 1933	15,277,000
April, 1933	10,870,400
May, 1932	15,742,200



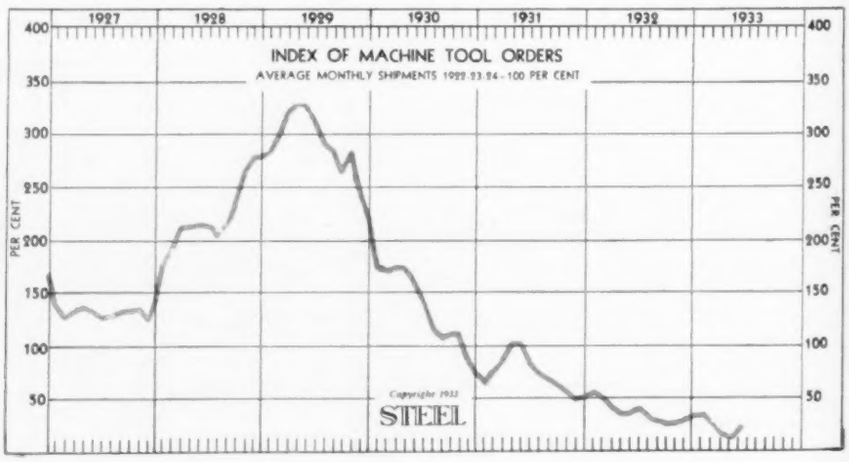
	1933	1932
June 10	564,546	501,685
June 3	508,234	447,412
May 27	541,309	521,249
May 20	531,095	515,628
May 13	523,819	517,260

Freight Car Loadings Continue Up; Reach Highest Point This Year

Loading of revenue freight for the week ending June 10 totaled 564,546 cars, the highest for any week this year, according to the weekly report of the American Railway association. This is a gain of 56,312 cars above the preceding week, when loadings were reduced due to the observance of Memorial day. It also was an increase of 62,861 cars above the same week in 1932 but a reduction of 167,863 cars under the same week in 1931. All districts reported increases in the total loading of all commodities compared with the same week in 1932 except the Central Western which showed a small decrease. All districts reported reductions compared with the same week in 1931.

Index of Machine Tool Orders Turn Upward in May

The decided increase in volume of business placed in May over the previous month reversed the downward trend in machine tool orders, according to the National Machine Tool Builders association. The three-month moving average for May was 19.1 compared with 14.9 in April and 37.5 in May, 1932. The shipment index was up three points to 22.9 for May and compares with 31.6 reported for May last year. Unfilled orders at the end of May increased to 32.5, adding a little more to the backlog of orders on hand at the beginning of June. Unfilled orders in May last year were reported at 64.6. This is the first encouraging upturn since the spring of 1931 when the index reached 103.3 in May.



	Per Cent
May, 1933	19.1
April, 1933	14.9
May, 1932	37.5

Conveyors Speed Up Enameling of Stove Parts

BY J. B. NEALEY

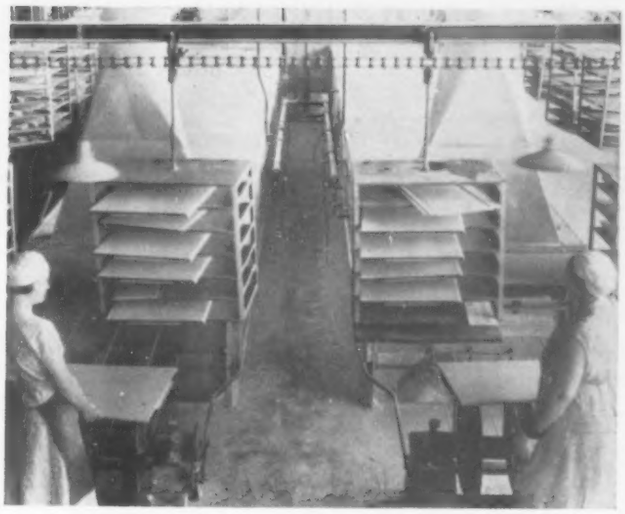


Fig. 1—Discharge end of twin gas-fired dryers. Operators transfer the work from the wire rope conveyors to racks on the overhead chain conveyor

COMBINATION of furnaces and traveling conveyors has become common practice in the vitreous enameling industry, with the units for the different operations distributed about the conveyor in a variety of ways. The arrangement of the setup is of major importance in establishing the best speed of the production schedule and in determining the efficiency of the process as a whole.

A nicely worked out grouping has been accomplished in the new enameling division of the Florence Stove Co., Kankakee, Ill. This company is one of the world's largest manufacturers of oil stoves and, in addition, makes gas stoves and ranges of various types, as well as heaters, cookers, and many other items of stamped sheet steel. It has another plant in Gardner, Mass., and recently acquired the H. G. Weeks Electric Stove Co. in Goshen, Ind.

All stoves made in this plant are wholly or partially enameled and all operations incident to the application of this finish are centered about three overhead loop conveyors of the motor-driven, chain type. These conveyors are so laid out that they serve the various individual units in the process and converge at certain points so that the work can be transferred easily. Two of the conveyors serve one dryer and the vitrifying furnace, all four units being parallel and close together, thus the work can be dipped, dried and transferred to the high heat furnace with a minimum of labor. A general view of the enameling department is shown in Fig. 3.

The furnace conveyor, shown in Fig. 5, extends from the furnace almost the length of the room where it turns at right angles and crosses the room. This section is employed for

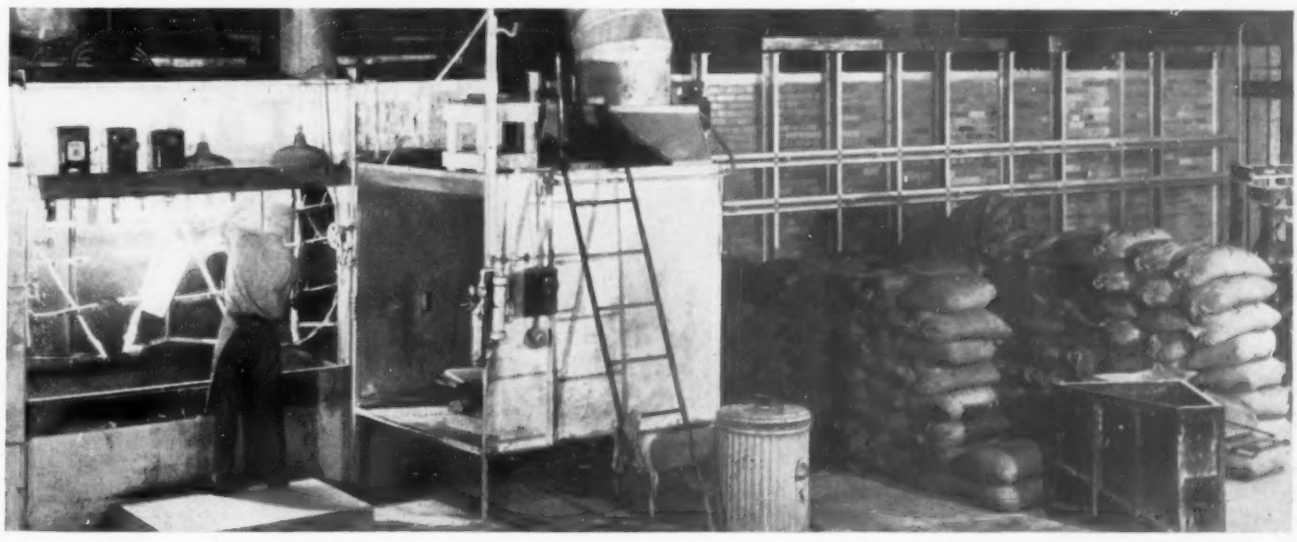


Fig. 2—Through this opening in the side of the ground coat dryer, an operator sprays the black edge on work as it passes. The rear end of the high-heat or vitrifying furnace is shown at the right

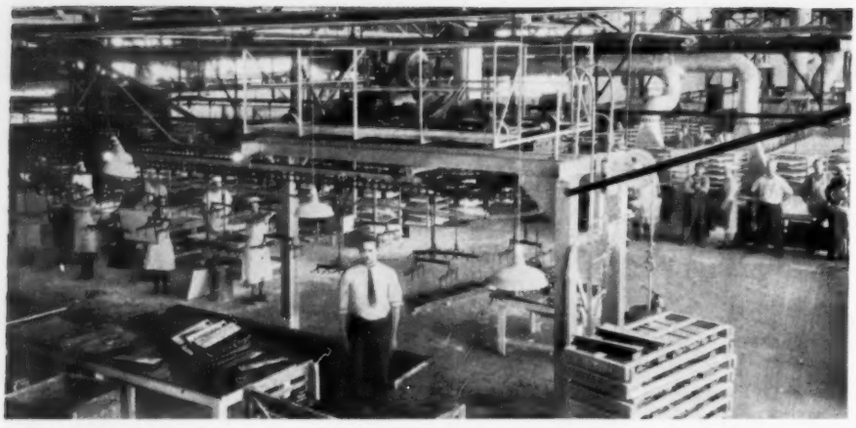


Fig. 3—A general view in the enameling department showing the overhead chain conveyor system. The twin dryers are at the right and the vitrifying furnace and ground coat dryer are in the left background

cooling, and carries the work past the inspectors and brushers. The third conveyor loops around the other two dryers and past the brushers, sprayers and inspectors, a re-enameling department being included for rejected ware which is cleaned and re-enameled.

The enameling process starts with the ground coat which is dipped on the stampings by the night shift, tanks of wet enamel on trucks being wheeled into position along the exposed portion of the conveyor of the ground coat dryer, as illustrated in Fig. 4. The dipped ware is hung onto the conveyor which travels the length of the dryer, turns and returns and as it leaves the dryer operators transfer it to the furnace conveyor which carries it through the furnace and return. A novel feature of this setup is the spraying on of the black edge which is accomplished through an opening in the side of the dryer, close to the rear end, as shown in Fig. 2. As the work inside the dryer passes this opening an operator sprays on the black edge. After inspection the work is stacked on racks and wheeled to the spray division.

Sprayed while on Conveyor

The first and second white or color coats are sprayed on in special booths at the charging ends of the other two dryers. The traveling conveyors of these dryers each consist of three parallel looped wire cables suspended between pulleys and operated by motors with variable-speed units. These conveyors extend through the spray booths, operators loading the work on them and other operators spraying on the enamel as they pass.

As the work emerges from the opposite ends of the dryers, Fig. 1, it is transferred to the overhead chain conveyor which takes it through the brushing department. Here the edges are brushed by hand or with brushing machines, the operators and machines being arranged in a row along this portion of the conveyor. Another portion of the vitrifying furnace conveyor runs parallel to this row, and just back of it so that the operators, after brushing, can reach back and place the work on this conveyor.

The work then travels through the high-heat furnace and returns to the inspection department, which is parallel to and removed from the brushing division only by the width of the conveyor. Here the work is removed and process inspected on tables and put on trucks for delivery to the spray division for the second coat and the process is repeated.

Furnaces Gas Fired

All of the heat for the dryers and furnace is derived from gas fuel. The high-heat furnace is built of brick, suitably stayed and is 85 feet long and 10 feet wide. It is divided into preheat and high-heat zones and embodies the counterflow principle, that is, the hot outgoing work transfers much of its heat to the cold incoming ware, in the preheat zone. The hot zone is 28 feet long, and the preheat zone 57 feet long. The hangers for carrying the work are suspended from the overhead chain conveyor which is above the furace, a slot being provided in the furnace roof for the shanks of the hangers to pass through.

This furnace is full muffle and is known as the hairpin type, as it is closed at the rear end. Heat is supplied through nine premix-type gas burners, four on one side, and five on the other. These fire into the muffle which extends under the hearth and up both sides, starting from the rear end. Waste products of combustion are removed through two long tunnels with multiple ports, located at the bottom of the furnace and discharging through a single stack with a check damper by which draft is regulated. A portion of this waste heat is piped to and used in the dryers.

Air Curtains Hold in Heat

As the rear end of this furnace is closed, heat naturally flows forward into the preheat zone and to prevent it from flowing out of the open end, two air curtains are employed. One of these is at the mouth of the furnace and consists of a sheet metal air box, one at the bottom and one at the top, air being blown straight up across the furnace opening and sucked into the box at the top from which it is exhausted by induced draft. A similar curtain is located inside the furnace in the preheat zone.

This furnace is provided with a potentiometer-type automatic temperature control with a recording pyrometer. Two manifolds are provided for all of the gas burners and two motor-operated mixers and two

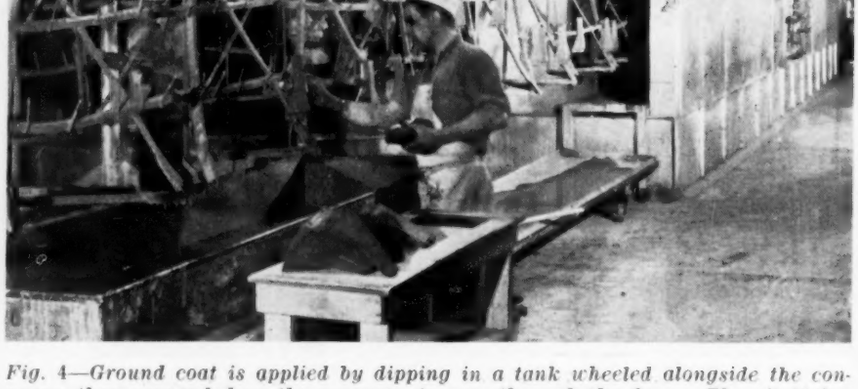


Fig. 4—Ground coat is applied by dipping in a tank wheeled alongside the conveyor, then suspended on the conveyor to pass through the dryer. The vitrifying furnace and its conveyor are at the left of the dryer

motor-operated valves are cut into the gas line close to the mixers. The same motor which operates the valve also actuates through a lever arm the shutter in the mixer opening through which air for combustion is drawn. In this way the gas and air are both shut off simultaneously when the temperature has risen above the point set on the indicator and, conversely, the flow of both is restored when the temperature has dropped. A little back of this control valve is a solenoid valve which is maintained in the open position so long as the motor is running, but if for any reason the motor current fails this valve automatically shuts off the gas flow. It is a safety appliance only.

Two Heat Sources for Dryers

The twin dryers are each 20 feet long, 4 feet high and 5 feet wide. They are constructed of sheet steel covered with 1½ inches of insulation and are so close together that there is just enough room for an operator to pass between to take care of the burners. In addition to the waste heat from the enameling furnace, each dryer is supplied with four drilled gas pipe burners, extending across the dryer and located near the center. A U-shaped manifold is located between the dryers and serves all eight burners. The heat from the furnace is forced in through ducts close to the discharge end and is exhausted by ducts near the charging end. The motor fan which supplies the exhaust also serves to draw the fumes from the spray booths.

The ground coat dryer is of similar construction but is 50 feet long, 8 feet wide, and 8 feet high. It also is supplied waste heat from the furnace, and in addition is equipped with two long drilled gas pipe burners.

The ground coat is burned on at from 1580 to 1600 degrees Fahr. and remains in the hot zone for about 3 minutes only. The two white or color coats are exposed to temperatures of from 1480 to 1520 degrees Fahr. for about 2½ minutes. The dryers are operated at approximately 600 degrees Fahr. and the work remains in them for about 2 minutes. The furnace has a capacity for 4500 square feet of work per hour and the gas consumption of 1000 B.t.u. will average 3500 cubic feet per hour. Utilization of waste heat in the dryers saves 2000 cubic feet of gas hourly.

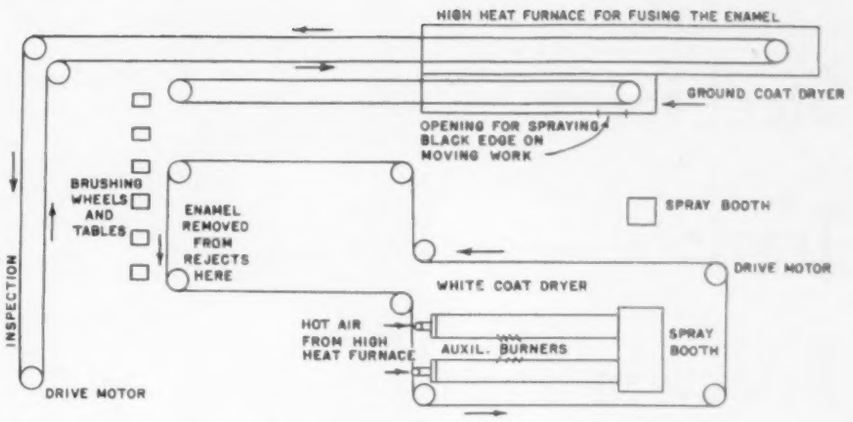


Fig. 5—A diagram of the enameling department layout showing the arrangement of equipment and overhead chain conveyors. By converging the conveyors at various points, easy transfer of work is made possible

Molybdenum Aids Iron Uniformity

ADVANTAGES of molybdenum in production of uniform castings of varying thickness have been demonstrated by recent German experiments, summarized in an article by the metallurgical director of the Gesellschaft fur Elektrometallurgie, Berlin, Germany, and translated by the Climax Molybdenum Co., New York.

The translation points out that in gray iron castings, varying in thickness, strains and often cracks occur at points where there are changes in section. It has been found that a most important effect of molybdenum in such castings is its power to distribute uniformly the carbides and graphite, independently of the cooling velocity in various sections. This uniformity of distribution is evidenced by uniform brinell hardness readings in sections of various thicknesses.

Tests Give Confirmation

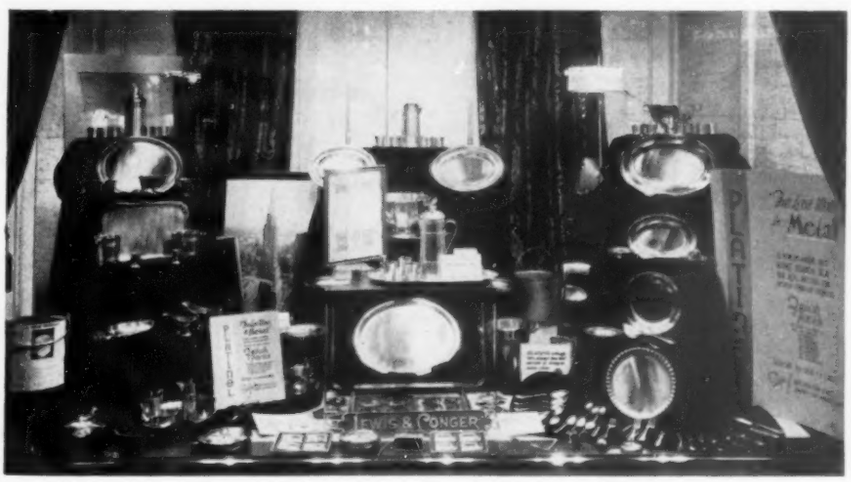
To support these deductions, tests were made, using an iron of the following analysis:

	Per cent
Total carbon	3.37
Silicon	1.81
Manganese	0.45
Phosphorus	0.85
Sulphur	0.10
Molybdenum	0.68

The heat was cast into four molds, the following tabulation showing wall thicknesses of the castings, combined carbon percentage and brinell hardnesses, and illustrating the uniformity found as a result of the molybdenum addition:

Wall thickness, inches	Combined carbon, per cent	Brinell hardness
0.39	0.85	204
0.79	0.85	196
1.18	0.86	200
1.57	0.84	198

Furthermore, it is explained that in castings where shrinkage is excessive in low carbon gray iron, and where a high-carbon iron would not give suitable properties in the casting, molybdenum additions to the high-carbon iron have been found to produce the strength and closeness of grain required, without causing undesirable shrinkage.



Stainless steel combines beauty with utility for much household, hotel and club equipment, ranging from drinkers' and smokers' outfits to trays, plates, cutlery, candlesticks, and the like. This illustration shows the first exhibit in the Lewis & Conger store, New York, of a line of 18-8 chrome-nickel steel products made by Platinel Inc., 229 East Thirty-seventh street, New York

Steel for Tractors — Selection and Heat Treatment

Steel parts are subjected to rigid test in this wide-track crawler tractor at work leveling off a new marine air field at the Quantico marine barracks, Quantico, Va.

BUILDING up specifications for tractor steel and setting up methods and equipment for its treatment are summarized in the accompanying article, abstracted from an address presented by G. C. Riegel, chief metallurgist, Caterpillar Tractor Co., Peoria, Ill., before a recent meeting of the Tri-City chapter of the American Society for Steel Treating at Moline, Ill.

INTERRUPTION of the steady flow of manufactured product is one of the most serious causes of losses in an industrial plant, since it leads to lowered shop efficiency, relative increase of fixed charges per unit of product and the loss of sales through nondelivery or slow delivery. Too often manufacturers overlook fundamental causes of interrupted production and assume that difficulties will adjust themselves automatically. Even the most diligent study and effort is many times insufficient to bring a remedy for production delays and stoppages unless the cause is traced back to the origin of the material.

Machining Pace Slowed

As a concrete example, let it be assumed that the production rate for a certain group of forgings is continually falling short of requirements. In such a case, the *actual* rates have been set for the *worst* conditions being encountered. For instance, in machining a nickel steel gear blank in the plant of the Caterpillar Tractor Co. it was found that the automatic lathe was doing only one half of what was required by the remainder of the machine line. Investigation disclosed that the microstructure was a great variable in the annealed structure of the blanks; hence, the machining pace was set for the worst conditions.

Beginning at the steel mill, testing for inherent chemical and physical characteristics before rolling, changing the forging process from batch to continuous heating, limiting the size of the stock for the upsetting operation, designing furnaces for controlled heating and cooling rates, it was possible to produce a definite and consistent microstructure with a corresponding narrow hardness range, thereby allowing the shop to more than double its previous production rate on the slowest machining operation.

This, however, was only an indirect benefit, or by-product, of the primary aim of producing a stronger and better gear. Turning to another example, about seven or eight years ago sporadic trouble was encountered with the failure of a final drive gear on a large tractor. Knowing that the majority of these gears served satisfactorily, the metallurgical department insisted that the forging source keep the product of mill heats separate and that they be correspondingly marked. While forging quality alloy steel had been used, conforming to limits of S.A.E. specifications, yet some 40 pieces out of one mill heat gave trouble in service over a period of two or three years.

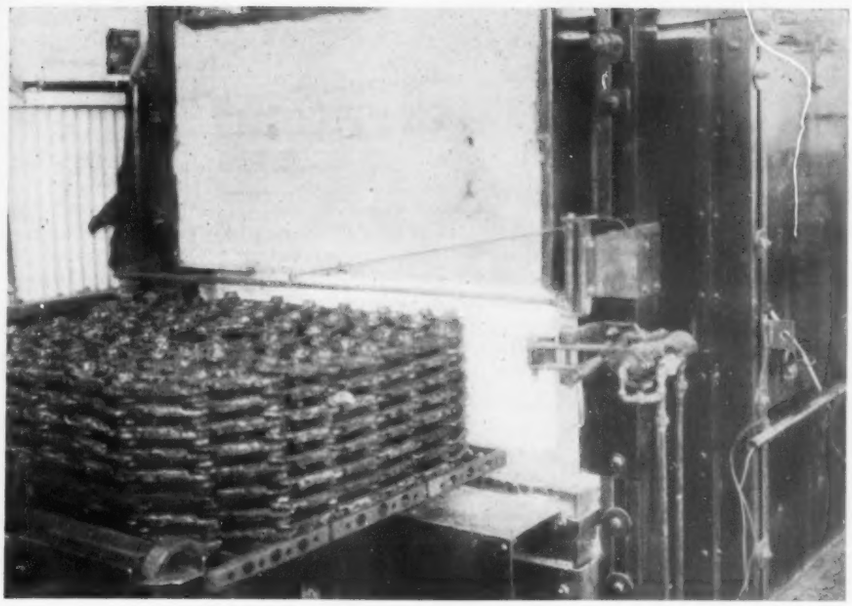
From these unsatisfactory gears, and from gears out of a mill heat which had given no trouble, samples were taken for examination. Fracture tests, hardness uniformity, etch tests, micro-cleanliness, impact tests and tensile tests were made. Impact samples were cut from the gears, without annealing, by the use of rubber-bonded saws and by finishing the specimens by grinding. Tensile specimens were cut from the annealed gears and subsequently treated to the same hardness as that in the gears. A number of interesting facts were found regarding the gears from the mill heat in which the failures had occurred.

Good gears were found to have a velvety fracture, a total range of 3 points section hardness on the Rockwell "C" scale, symmetrical flow lines and a fairly clean microstructure revealed by etching, impact tests mostly above 5 foot-pounds and a reduction of area of above 27 per cent. Poor gears had a dry, finely crystalline fracture, hardness range of 5 points, nonsymmetrical flow lines and considerable nonmetallic inclusions, impact tests below 5 foot-pounds and little reduction of area with mostly flat breaks on tensile tests.

Service Tests Also Count

Of course, sweeping conclusions cannot be adduced from too little experimental evidence; therefore, it was not possible immediately to put into practice the restrictions which seemed advisable in controlling steel quality at the sources. In addition to experimental results must be considered the results of service tests. Parts which "stand up" in service may be no better than some which fail unless shown by physical tests. Likewise, limitations must be set up to avoid the use of too expensive material and methods.

Following out this procedure a number of mill heats were tested, as well as heats from several mills. Fortified by accumulated evidence, it became possible to go to the mills and ask for the type of steel which gave the satisfactory performance. With due regard to the more helpful and co-operative spirit of steel manufac-



Selection of heat treating equipment is governed by characteristics desired in the finished steel. Here a number of track links are shown entering a progressive type electric furnace

turers today, at that time the demands were considered to be impracticable.

However, the Caterpillar company specified its wish to buy steel by mill heat lots, receiving samples from the bottom of the first ingot after the usual discard, and in a like manner from the top of the last ingot, thus making available the minimum of quality to be applied on orders. After upsetting the flow lines in these steel billet samples, specimens were taken from the "centers" which gave flow lines transverse to the length of the specimens. From these values, it was attempted to set up minimum requirements. Anything above these minima, of course, should be the constant aim of the steel source and it developed that on more than one occasion during the several years in which these specifications have been in force at the mills, steelmakers have agreed to further restrictions and the raising of minimum values.

Special Qualities Demanded

Discussion thus far has dealt only with the directly hardened steels and their metallurgical selection. Naturally, the company also consumes large quantities of low-carbon steels which are carburized and hardened. In addition to the demand for proper response to the carburizing and hardening processes, other special qualities are specified and obtained, for example, broaching or machining quality, and welding quality.

In 1928 steps were taken by the Caterpillar company to have steelmakers raise the normal manganese content of steels used in fabrication of seamless steel tubing, the suggestion being made that the manganese addition be made after, or simultaneously with the "killing" or deoxidizing of the heat with ferrosilicon. Gradually this practice was adopted by mills supplying hot-rolled and cold-finished bars of similar applications. While this revised melting practice is more expensive, nevertheless the cost of the finished product in the mills, as a result of freedom from rejections, low chipping costs, etc., is ultimately lower. Experience has proved that rejections of identified mill heats as well as rejections in process have been extremely low.

Mill Control Is Precise

Regarding the control of carburizing and hardening qualities, it has been the experience that this factor can be regulated almost 100 per cent in the mill practice. On the other hand, "pickups" from warehouses of steel for such use more often meet with rejection than with acceptance.

In the control of heat treament a form captioned a "Materials Analysis" is required to be filled out by all suppliers of steel products intended for heat treatment. Thus the inspection and metallurgical departments are furnished with complete information as to the type of material, car number, quantity, identification, chemical analysis, etc.

The metallurgical department, having previously passed upon the physical characteristics of the steel thus identified, now confirms and accepts the material. Any special notations concerning heat treatment are listed on a "Materials Disposition Report."

Parts arrive at the heat treating department carrying some form of identification, such as permanent stamping, painting or tagging. The parts are then processed as mill heat lots, on which careful records are kept. With some parts, pilot lots are treated from each new mill heat, resulting in the establishing of quenching time and draw temperatures for the entire heat, as well as in the regulation of subsequent machining operations.

For each part there has been prepared a "Heat Treat and Test Instruction Sheet," serving in the same manner as a factory route sheet in determining the order of processing. In this sheet is given all essential information as to the type of furnace to be used, method of loading and spacing in the furnace, location of thermocouples, type of fixtures used in heating and quenching, energy input and its regulation during the cycle, quenching method and medium, quenching time, hardness after quenching, drawing method and time, final hardness tests and their exact locations on the part. After the heat treatment of rough parts, such as forgings and castings, they are given a dab of aluminum paint to distinguish them thereafter from untreated parts.

Permanent Record Filed

After testing at final hardness inspection, a card is filled out, giving a permanent record of the individual piece or part performance. Value of these records is demonstrated when something shows up wrong with a group of parts from a certain mill heat. The parts, whether finished, semi-finished or rough, can be segregated and held up while production is maintained by moving ahead satisfactory material. From the standpoint of service performance, these records are of great worth in running down trouble and improving the product.

The general policy of the company has been to purchase furnaces and other equipment, if such were available, of the characteristics and design suitable to the product. Unfortunately, however, this has resulted in designing and building the majority of the equipment by the company itself.

Over 100 heat treating furnaces, or machines as some of them are, have been installed, about 85 per cent of which are electrically energized. The type of furnace, power to be used and initial expense of the installation as a rule have been subordinated to the more important factor—the final characteristics of the heat treated parts.

Russia Produces Vanadium

The problem of producing vanadium from Kerch ores in Russia finally has been solved, according to the May bulletin of economic information of the U. S. S. R. chamber of commerce, Moscow. The experimental installation of the Kerch Foundry now is said to be producing vanadocalcium which is subsequently passed through electric furnaces, resulting in ferrovanadium.

Foundrymen View Recovery Law with Anticipation

ALTHOUGH the program of the thirty-seventh annual convention of the American Foundrymen's association held June 20-23 at the Stevens hotel, Chicago, followed the general pattern of previous meetings, it seemed to achieve broader scope and deeper penetration into important problems of the foundry industry.

Technical sessions on steel, gray iron, malleable and nonferrous practice, shop courses and roundtable discussions attracted more than usual attendance and interest, but throughout the entire proceedings was a current of anticipation as to what the national industrial recovery act will mean to American foundries.

The intense interest in the recovery act was manifested by the attention given to the address on business and politics by Fred W. Sargent, president, Chicago & North Western railway, Chicago, again in the national industrial recovery conference Tuesday afternoon, and also in the activities of several groups preparing for functioning under terms of the new law.

Holds Recovery Certain

Underconsumption of the products of industry during the past four years has set the stage for an immediate and reasonable business recovery, in spite of all legislation passed by the recent congress, according to Mr. Sargent, speaking before the joint luncheon meeting of the American Foundrymen's association and the Foundry Equipment Manufacturers' association. As an example of the potential demand now existing for materials, Mr. Sargent stated that the railroads do not have enough material of certain types on hand to last a week if business improves to any great extent.

Combined legislation of the last congress delegating legislative authority to the executive branch of the government and moving entirely out of the laissez-faire doctrine into that of a socialistic, co-operative and co-partnership arrangement between government and all its various individual and corporate lines of activity may be considered as one of the three great turning points in American history, according to Mr. Sargent. The others were the American revolution with the adoption of the constitution, and the establishment of the permanency of the Union.

If such a policy can be administered without destroying the incentive to progress, without destroying individual initiative and enterprise, then such a policy is to be desired. However, Mr. Sargent believes the great fear is that human nature may have to be made over before a socialistic regime will succeed. He expressed the hope that the American nation in administering the new laws, will keep as close as possible to those sound, fundamental rules of government and economic principles that have guided us in the past and at the same time undertake, through the recent legislation, to bring about even a greater area of prosperity and a greater distribution of wealth than we have experienced in the past.

Need Full Co-operation

To this end, Mr. Sargent stressed the necessity for every man and woman aiding the administrating of the new legislation. We must live, however, always in the hope that we will not abandon completely the basic principles of a free and democratic form of government that already has stood the test for a longer period than any other similar government in all history.

Important activities of the American Foundrymen's association during the past year were discussed briefly by President T. S. Hammond, president, Whiting Corp., Harvey, Ill., at the opening meeting of the convention on Tuesday morning. These include the *Handbook on Cast Metals*, which now is being prepared under the auspices of the A.F.A., and the work in connection with good housekeeping in foundries.

President Hammond believes that the important activity of the immediate future is to find where the foundry industry will fit into the situation created by the national industrial recovery act. Vice President Frank J. Lanahan also stressed the importance of that legislation to the foundry field.

Dan M. Avey, editor, *The Foundry*, Cleveland, chairman of the international relations committee of the association, presented a resolution embodying greetings to the Institute of British Foundrymen, which was holding its meeting in London.

Drama Well Received

"Building for Profits," a four-act play, effectively dramatized the benefits of an efficient cost system before a large audience at Tuesday afternoon's cost session. The cast of 16 actors, headed by James L. Wick Jr., Falcon Bronze Co., Youngstown, and Albert E. Grover, cost director, Gray Iron Institute Inc., Cleveland, portrayed the experiences of the "Monarch Foundry Co." in attempting to eliminate losses which gradually were pushing the company into bankruptcy.

Over objections of some of its directors, a costs expert was engaged to make a survey of the company, recommendations for the installation of a new costs system were adopted and losses were turned into profits. Proper methods of figuring costs on proposed casting work were detailed during the play.

Wide Variations in Power Charges Imply Need for Revisions

STRIKING inequalities in power rates throughout the country were brought out at a joint conference attended by representatives of the foundrymen's association, Steel Founders' Society of America, Gray Iron institute, Malleable Iron Research institute and leading power companies.

A survey made of steel and iron foundries, steel mills and brass foundries, encompassing 130 different localities throughout the country, demonstrated that there is no basic uniformity in rate structures. The principal contention of users during the depression period has been that demand charges imposed a burden inconsistent with the times and a penalty upon manufacturers using electric melting equipment. In some cases the proportion of the total electric bill represented by demand charge has ranged as high as 74 per cent. In terms of selling price of castings this charge has varied from 3.3 to 38 per cent.

Representatives of power interests explained the demand charge as being based upon considerations similar to an overhead structure established by any manufacturer. This interprettion was contested by foundry representatives and a number of inequalities were stressed in which it was shown that the demand charge did not in any way re-

(*Please turn to Page* 43)

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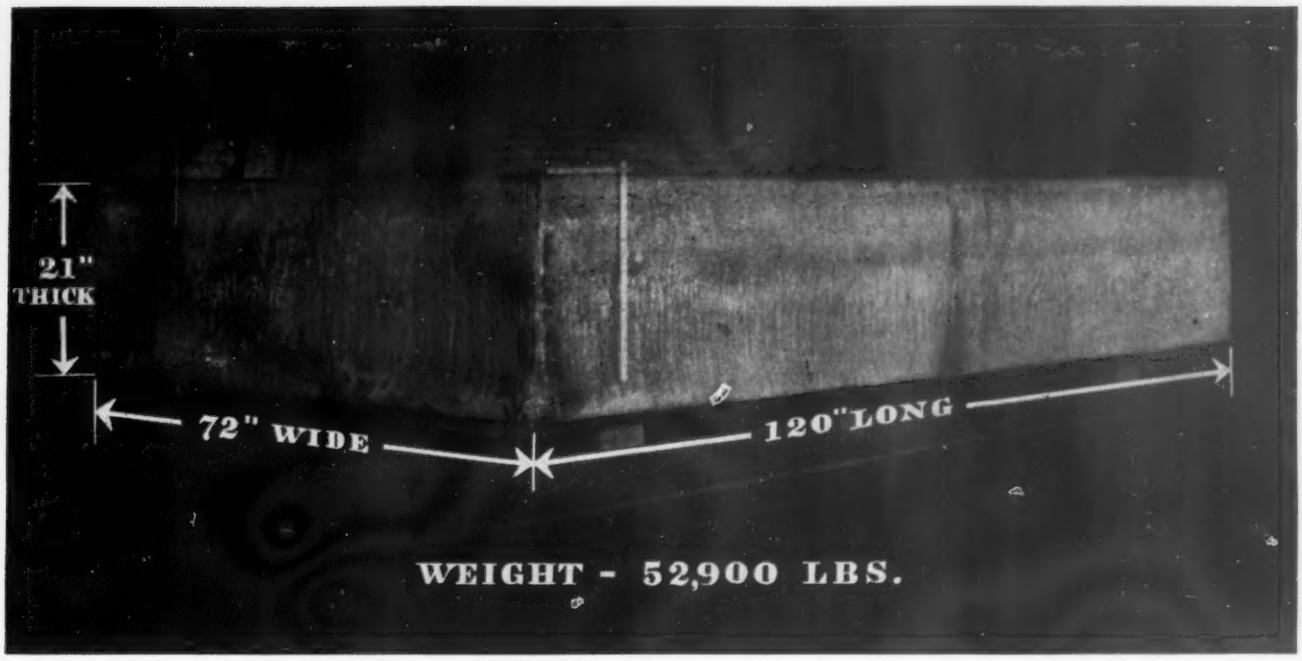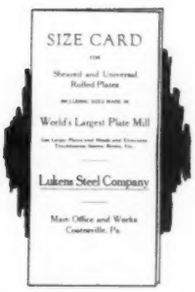

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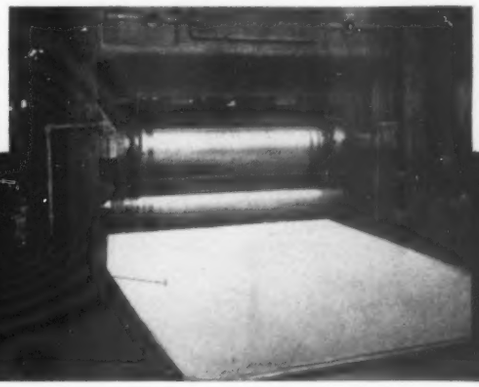

WORLD'S LARGEST PLATE MILL

Making the Most of

METHODS AND MATERIALS

THE photoelectric cell has been applied to measurement of light output from mazda lamps during the process of manufacture. A lamp is designed to produce at a given voltage a definite light output in lumens per watt of electricity flowing through its filament. To maintain this standard, representative lamps are removed from each lot at regular intervals and subjected to test in a photometer which consists of a large steel sphere, painted white inside and equipped with precision measuring instruments. The lamp is placed inside the sphere and the intensity of its light falling on each inch of white surface of the interior is measured automatically and accurately by the electric eye. Previously, the light was measured by a woman operator with occasional errors due to the human element. Greater accuracy and doubling of the measuring speed has resulted from use of the photoelectric cell.

$ $ $

A rubber-lined valve of simple, rugged design for handling corrosive and abrasive fluids under conditions of fairly high pressure, pulsating pressure, throttling or suction, has been placed on the market by an Akron, O., rubber company. The valve body is of cast iron of new two-piece Y-construction intended to withstand working pressures up to 150 pounds per square inch. The lining is any one of several acid-seal rubber compounds, hard or soft, depending upon conditions of service. By a special process, this lining is bonded to the metal parts, leaving no metal exposed to the fluids passing through the valve.

$ $ $

CHROMIUM now is being added to cupola iron in amounts up to 25 per cent. In this type of iron it is desirable to keep the carbon as low as possible. This is done by using steel scrap in the charge. High-chromium cast iron is used for wear and heat-resistant castings. If properly made, the metal is stronger and tougher than white iron.

$ $ $

One of the newer finishes now being applied for decorative effect on zinc die castings is the so-called patina treatment, which is an antiquating process produced by electrodeposition of metallic oxides. Greens, blues, browns and golds which simulate the patinas of naturally corroding copper and bronze may be had by this process. It is relatively inexpensive.

$ $ $

A manufacturer of steel balls has been etch testing tool steels for a number of years. Cold header dies probably are the most important for a steel with a good center, free from nonmetallic inclusions, is needed. On certain tool steels in which the center is cut out, it is possible to use a more porous center, but this problem is in the hands of the plant metallurgist. With proper co-operation between the plant metallurgist and steel metallurgist, the etch test should be no hardship on the steelmaker and should result in a quality of steel which will be eminently satisfactory for tools.

$ $ $

Operation of an automobile truck using city gas as fuel has been accomplished in England by merely removing the gasoline tank and tubing and substituting for them gas cylinders and reducing valves. To keep the weight of the cylinders within reasonable limits and at the same time to provide sufficiently high strength to resist the high pressure, it was necessary to select the cylinder material carefully. Steel of the following approximate composition was chosen: Carbon, 0.30; nickel, 3.00; chromium, 0.90; and molybdenum, 0.40 per cent. All experimental steels were subjected to hydraulic pressure, bursting, crushing and flattening, as well as to the standard tensile and hardness tests. The gas cylinders each have a free gas capacity of about 350 cubic feet and the working pressure is about 3000 pounds per square inch.

$ $ $

In the metals and metalworking industries, mechanical accidents run as high as 37 per cent for machine shops and 23 per cent for foundries. The records show that the accidents due to machinery generally cost considerably more than those due to personal causes because of increased severity.

$ $ $

IN A RECENT investigation on the causes of blistering of enamel on cast iron, two extreme irons were used, a distinctly nonblistering iron of high-silicon type and a blistering iron of low silicon content, so extreme that it blistered even with the surface removed. The work confirmed previous reports that it is safest to use a high silicon iron.

$ $ $

To obtain their maximum advantage, molybdenum steels should receive some form of heat treatment. These steels require longer time at quenching temperatures because the transformation takes place slowly.

$ $ $

Stainless clad steel, comprising a layer of stainless steel and a thicker layer of mild steel rolled from a composite ingot and having an inseparable bond, is being welded successfully for pipe work. Considerable research work has been conducted in spiral welding with the stainless surface on either the interior of exterior. There is said to be complete assurance of a perfect weld and the stainless portion of the weld has the same corrosion-resisting properties as the stainless surface of the pipe. For pipe and plate work the stainless layer may comprise from 5 to 50 per cent of the total thickness of the metal, depending upon the pressures and degree of corrosion resistance demanded.

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Only twenty-five cuts of 2¼" rounds from a tool—something wrong. A shift to J & L steel and—two hundred cuts before regrinding the cutting-off tool. Simply a matter of quality—known quality—uniform quality. J & L Warehouse stocks are like that. Whatever your need, here is the right quality of steel in a full range of sizes, ready for quick delivery from convenient points. Write for the J & L Combined Stock List and depend on J & L for your steel requirements.

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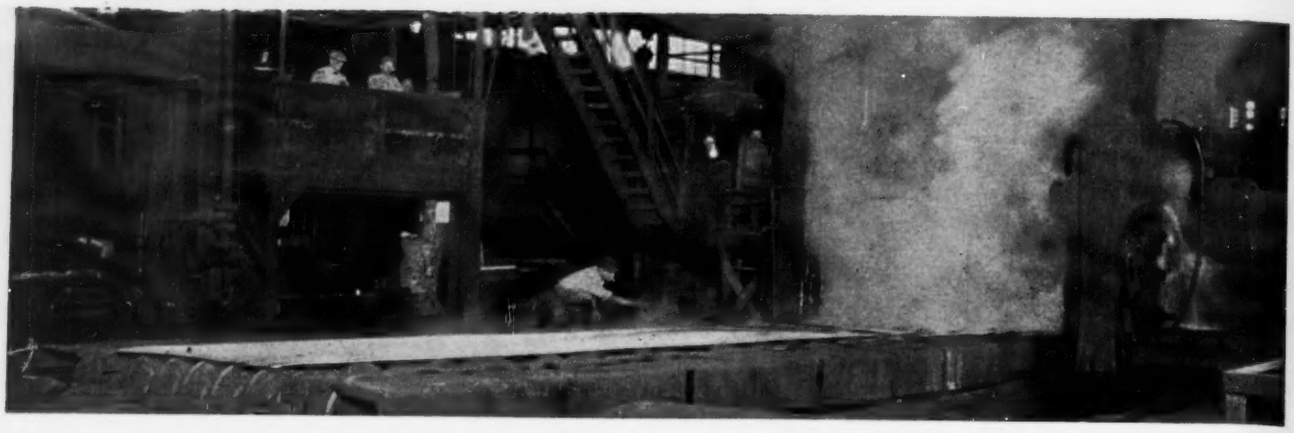


PROGRESS IN STEELMAKING

TUBES for oil stills now are being made from a new alloy steel by a tubemaker in the Pittsburgh district. The steel is of ordinary carbon and contains about 0.75 per cent molybdenum and no chromium. Theoretically, oil still tubes made of this grade steel are expected to show many advantages.

REDUCTION in the welding time, elimination of preparatory work and the decrease in the quantity of weld metal required, are claimed for a recently developed arc welding process for joining heavy plates. All need for veeing or grooving the edges of the plates is obviated. The plates may be joined just as they come from the finishing mill.

♦ ♦ ♦

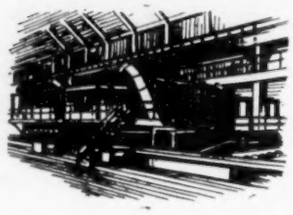
Approximately 90 per cent of all molybdenum steel produced in this country at the present time is made from calcium molybdate.

♦ ♦ ♦

Synthetic resin-asbestos, developed in Germany a decade ago, now is being manufactured in this country. One of its most important uses is in the construction of pickling tanks. Such tanks installed in England three years ago for handling hydrochloric acid containing 5 per cent of nitric acid are giving satisfactory performance. The material has a compressive strength of 10,400 pounds per square inch and may be used at temperatures up to 265 degrees Fahr. The heat conductivity is low, thus affording economy in steam consumption as well as good working conditions. Tanks made of this product may be allowed to remain inactive for long periods without deterioration.

♦ ♦ ♦

Bulging the top of housings of an 84-inch cold mill to accommodate the screw through which pressure is applied to the rolls, has been obviated by the design of a self-contained mechanism. This essentially is a screw jack which exerts pressure between the rolls and the inside of the top of the housing. The design is compact and efficient and permits the use of a simple housing with no square corners, projections, or changes in section or contour, thus affording concentration of stresses.

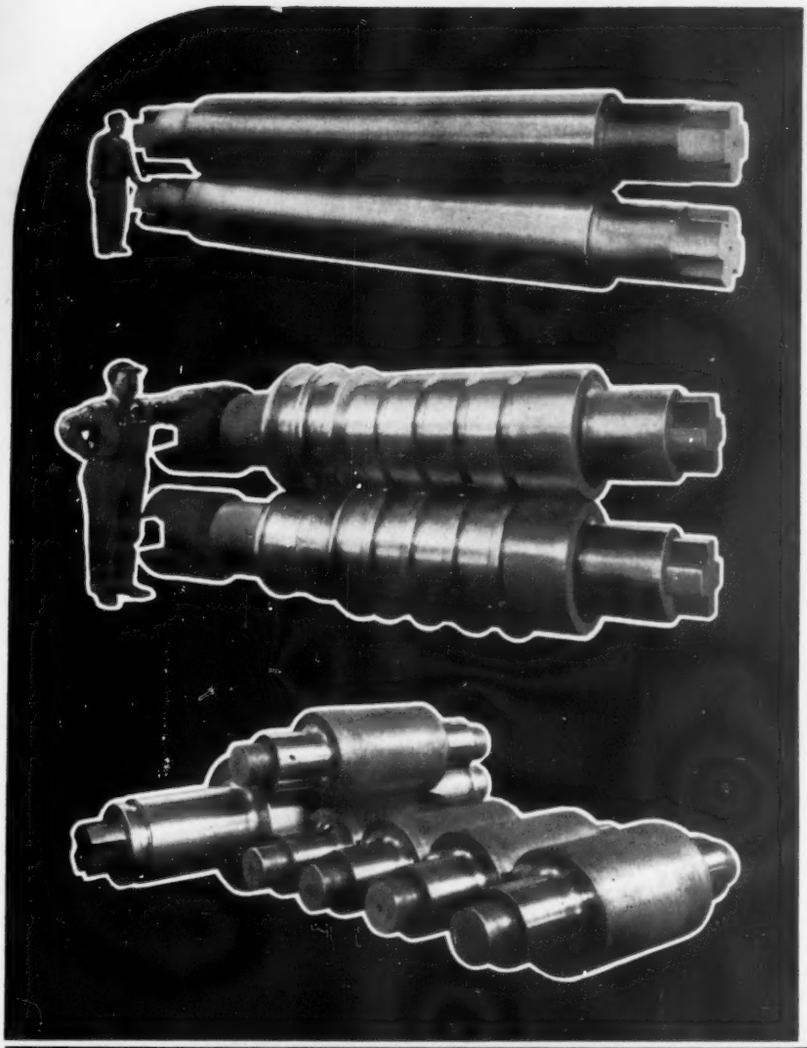


MEANS for measuring the temperature of metal while in transit over roller tables, for recording the temperature graphically on a chart, and for operating numerous control devices at predetermined temperatures, now are possible by the use of the photoelectric pyrometer which utilizes the radiation from the hot metal as an indication of the temperature. The apparatus includes a vacuum type phototube and an amplifying pliotron tube for changing the microampere output of the phototube into milliamperes with which either an indicating milliammeter calibrated in degrees Fahr., or a recording ammeter, may be operated. In addition the control equipment may contain one or more thyratron relays, from which it is possible to operate control circuits at definite adjustable temperatures. The phototube pyrometer is applicable only to temperatures above 15 degrees Fahr. As long as its field of vision at the time it is measuring temperature, is covered completely by an area of the hot metal a variation in distance between the phototube and the metal does not affect the results.

OVERTRAVEL of the main hoist on electric cranes may be prevented by the installation of a small size limit safety stop recently designed with standard mill type blowouts. The new unit is rated for 40 horsepower and under and approximately only 9 inches of head room is required.

♦ ♦ ♦

A new substance termed "Lithophob" has been developed by foreign metallurgists for removing boiler scale by mechanical action. The preparation is said to penetrate the scale until it reaches the metal under-surface, and then breaks up the scale into flakes. The material is composed of inorganic substances with a graphite base and, therefore, does not damage the interior of the boiler or other fittings. The quantity of material used is determined solely by the area of the surface to be treated and not according to the hardness of the water or evaporation of the boiler. Treatment is only necessary once every four to six weeks. Practical tests with this material indicate a marked increase in boiler efficiency and, in addition, a substantial saving in the cost of fuel.



Plain Chilled Iron

Molybdenum Chilled Iron

Sand Iron

Sand Iron Chilled Pass

Alloy Iron

Alloy Chilled Grain Iron

Alloy Iron Fine Grain

Carbon Steel

Mesta Special Alloy Steel (Heat Treated)

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Mesta Hardened (Mild-Medium-Hard)

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Research and Service Guides To Efficient Purchasing

By W. J. PRIESTLEY
Vice President, Electro Metallurgical Co.

PURCHASING today is done on a scientific basis. Nearly all products are bought on specifications which require the best material for the purpose intended for the lowest price. Your duty as a purchasing agent is to get for your company greatest value for money spent. There are various ways in which this value may be obtained and it may be interesting to discuss some of the latent values which are not always recognized in the price you pay for commodities.

The modern purchasing agent can get the benefit of these latent values by proceeding as follows:

1. Buy from a company well fortified and protected with respect to its supply of raw materials.
2. Buy from a well established company that believes in the value of research and development work in the industry it represents.
3. Buy from a company that maintains a competent service department for the benefit of its customers.
4. Keep informed on technical developments in industries allied to your own.
5. Maintain supervision over materials purchased for construction, repairs and maintenance of your own plant.

Let us discuss each of these topics in detail and see what they mean in dollars and cents to a purchasing agent.

PURCHASING agents today must be guided by more than a mere dollars and cents scale in their buying. A source of supply which maintains active research, competent service and a strong position in the industry; thorough knowledge of technical developments; and supervision over materials purchased for construction, repair and maintenance are all factors which govern scientific purchasing. Elaboration of these points is presented in the accompanying article, based on an address made by W. J. Priestley, vice president, Electro Metallurgical Co., New York, before the annual convention of the National Association of Purchasing Agents in Boston, June 12-15.

From Ends of the Earth

In the case of ferroalloys, the raw materials used in their manufacture come from all parts of the globe. Chrome ore for ferrochrome comes from Africa, New Caledonia or Turkey. Tungsten ore for ferrotungsten comes from China, Burma, Bolivia and isolated spots in the United States. An important deposit of vanadium ore for making ferrovanadium is in Peru. As a result of extensive prospecting, a valuable deposit was found in the state of Colorado. Manganese ore used for making ferromanganese comes from Africa, Russia, South America and India. Titanium ore is a local product and is mined in Virginia.

These examples give an idea of the exploration and great expense connected with the development of products which are fairly common commodities in the steel industry. Substantial means and large organizations are required to assemble the raw materials for making ferroalloys of the quality demanded by present day steel practice. A thorough understanding of the needs of customers and the markets which they are developing for their products also is required.

The problem of intergranular corrosion in stainless steel challenged our research engineers. Experimentation was conducted with numerous new alloys and one was found which was satisfactory. This part of the problem proved to be simpler than the one encountered in combing the globe for a satisfactory source of supply of the raw material. Buyers rarely appreciate this when they send in orders for any quantity from 100 pounds to carload lots and get delivery of selected grades on three to five hours' notice. The assurance of reliable service in times of emergency is a factor well worth considering when contracting for raw materials.

Research is the mainspring of modern industrial development. In the metallurgical field it aims to reduce the cost and improve existing processes and to discover new processes. It works to obtain new combinations of alloys to meet new industrial conditions. It strives to broaden the use of alloys in new markets where they can be used beneficially.

Numerous examples could be cited where research in metallurgy has resulted in discoveries of incalculable economic value. The discovery of 4 per cent silicon steel of high permeability and low hysteresis, which is used in transformers and other electrical equipment, has been estimated to have saved coal to the value of not less than $20,000,000 annually.

Stainless steel is another signal development of the research laboratory. When first discovered by Brearley its use was limited to cutlery. Now it is being made in various grades in the form of shapes, castings and sheets, which can be worked and welded similarly to ordinary steel. This development alone has saved millions of dollars in the operating expense of chemical companies.

Development of alloy steels, resulting from research, has revolutionized the automotive and aircraft industries. Another example is the hydrogenation process recently developed in the oil industry which depends for its success upon higher pressures and temperatures. This created a demand for a new steel which would resist corrosion and oxidation and, at the same time, have greater strength at higher operating temperatures. These conditions were met with a new steel containing 25 per cent chromium and 20 per cent nickel.

Research Benefits Consumer

This progress is due to the far seeing policy of companies which have been willing to appropriate money for research and it has placed in the hands of the consumer products that would not otherwise have been available. The cost of this research work must be absorbed in the price of products and far-sighted purchasing agents appreciate it for the ultimate good they derive from it. If you have the choice of buying your commodities from two concerns, one which does nothing of this kind and the other which does it as a part of its manufacturing policy, there is no question about which company serves you better and gives you the most for your money.

Many companies offer service with their products but some of them give more than others. The value of good service cannot be evaluated in dollars and cents. We have service engineers who have nothing whatever to do with sales. It is their duty to see that our products are properly used and that customers get the best results from what they buy. Modern producers make it a business to know all about their products and they become highly specialized in their own field. The recognition of this kind of service and its value to your operating people is another factor which should not be overlooked when contracting for your commodities.

The suggestion that a purchasing

agent keep informed on technical development may seem remote from his duties but I find that many of them, through their contacts and acquaintance with specialists in the various engineering fields, are able to bring helpful information to the attention of their own organizations. I know one purchasing agent who gave his operating people the idea of a new process for surface hardening metals which changed completely the standard of the machinery they were building.

Your construction and operating engineers are interested in materials that will save weight, increase strength and, at the same time, reduce installation and operating costs. Recently we were able to pass along to a shipbuilder some interesting figures in the saving to be derived from the use of higher strength steel for ship construction. By reducing the weight of a 16,000-ton ship by 20 per cent, it was found that the same speed could be obtained with a saving in fuel of approximately $70,000 per year.

Your engineers also are looking for materials that will give longer life when subject to wear and abrasion and metals that will resist oxidation and corrosion. I recall recommending to a purchasing agent of a mining company the use of chromium in the cast-iron grinding balls. By adding 33 per cent to the cost of the balls, he was able to save approximately $180 per day. In another example an oil company used 5 per cent chrome steel tubing to replace carbon steel. By paying four times as much for the alloy steel, the purchasing agent was able to increase the life of his equipment from 5 to 20 times.

Lower Operating Costs

In using alloy steels, the saving in the cost of operation and not the initial cost of the steel is the essential item. You can afford to pay more for alloy steels which insure continuous operation and prevent breakdowns. By checking the kind of materials specified by his engineering department, the purchasing agent can effect more economical operation and a resultant greater profit for his company.

During the past few years, amazing strides have been made in the wider application of alloy steels and irons. In the dairy industry, stainless steel is being used for all types of equipment from milking tubes to tank cars. While the first cost may be somewhat greater, the stainless steel requires less maintenance, gives permanent service and is more economical in the end.

In the oil industry, several different grades of stainless steel now are used for cracking stills. Five per cent chrome steel tubing is rapidly replacing simple carbon steel. The higher working pressures and temperatures have made it possible to shorten the time of operation and raise the yield by an astonishing percentage. Carbon tubes have been known to burn out in 300 hours while a report received recently on 5 per cent chrome steel with 1 per cent tungsten shows 9200 hours' service with the tubes practically as good as new. This results in a twofold economy saving in the cost of replacement of material and time gained through continuous operation.

For marine work subject to sea water corrosion, 18-8 chrome-nickel steel is giving excellent service in the form of cables, hardware, pontoons and tanks that are intermittently filled with gasoline and salt water. Its greater strength permits lighter construction and it is being used for masts, wireless antenna arms and other parts of the superstructure on ships.

Withstands High Pressures

Five per cent chrome steel now is being used successfully for valves and fittings in modern high pressure steam plants operating at temperatures exceeding 900 degrees Fahr. and 1300 pounds pressure.

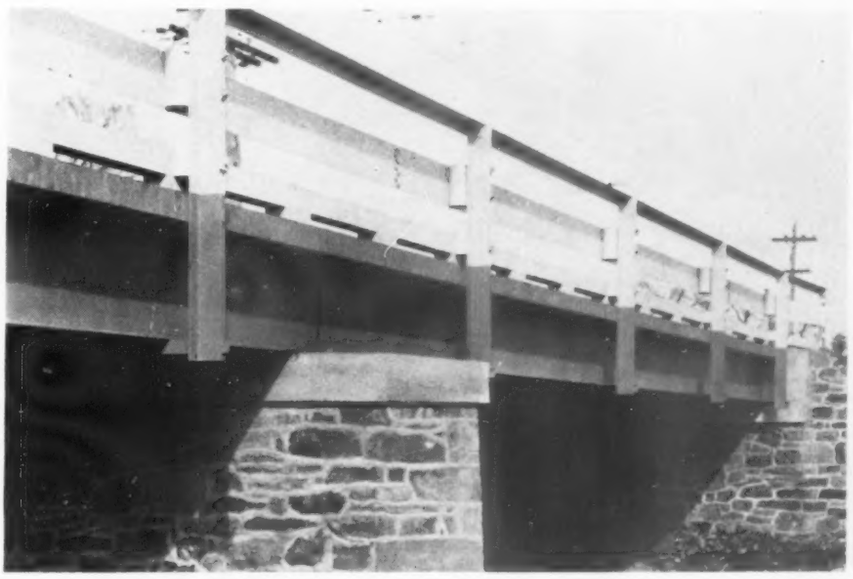
These few illustrations have been given to emphasize the benefits and economies a purchasing agent can effect for his company by keeping his engineering department posted on developments in the use of alloy steels.

Cast iron often is used for machine parts which require frequent replacement due to wear or breakage. Ordinary gray iron castings often are used for furnace parts subject to excessive oxidation. This is because cast iron is the least expensive material and it is figured that replacements will cost less than if some other metal were used. This line of reasoning has been proved erroneous.

Alloys Pay in Service

Check this statement by verifying conditions in your own plant and you will be surprised at the amount of money spent for repairs of this kind which are constantly recurring. Alloy castings are available which give longer life in service and pay for themselves many times over. A certain plant was having trouble with its cast-iron stoker bars and every time they were replaced it meant closing down to make the necessary repairs. By the addition of chromium to these same castings, the trouble was eliminated and the cost of the alloy bars proved to be negligible compared with the saving which was effected in operating expense.

As purchasing agents you will continue to look for the lowest prices, but that should not interfere with your assuming an aggressive part in your own organization in specifying the best material for the purpose intended and purchasing it from a source of supply that can give you the best service and continue to help you by the progress they are making in their own industry.



OLD BRIDGES REPLACED WITH STEEL STRUCTURES: Developed by the Pennsylvania Department of Highways, Harrisburg, Pa., to replace old highway bridges beyond repair or reconstruction, this type of I-beam bridge has been found to provide excellent service at a cost within the budget. Main supporting members are I-beams, in many cases salvaged from old structures. Decking is of laminated timber secured by anchor plates and covered with suitable wearing surface. Railings and guards are of steel—channels, angles and plates. Welding is utilized in much of the assembly

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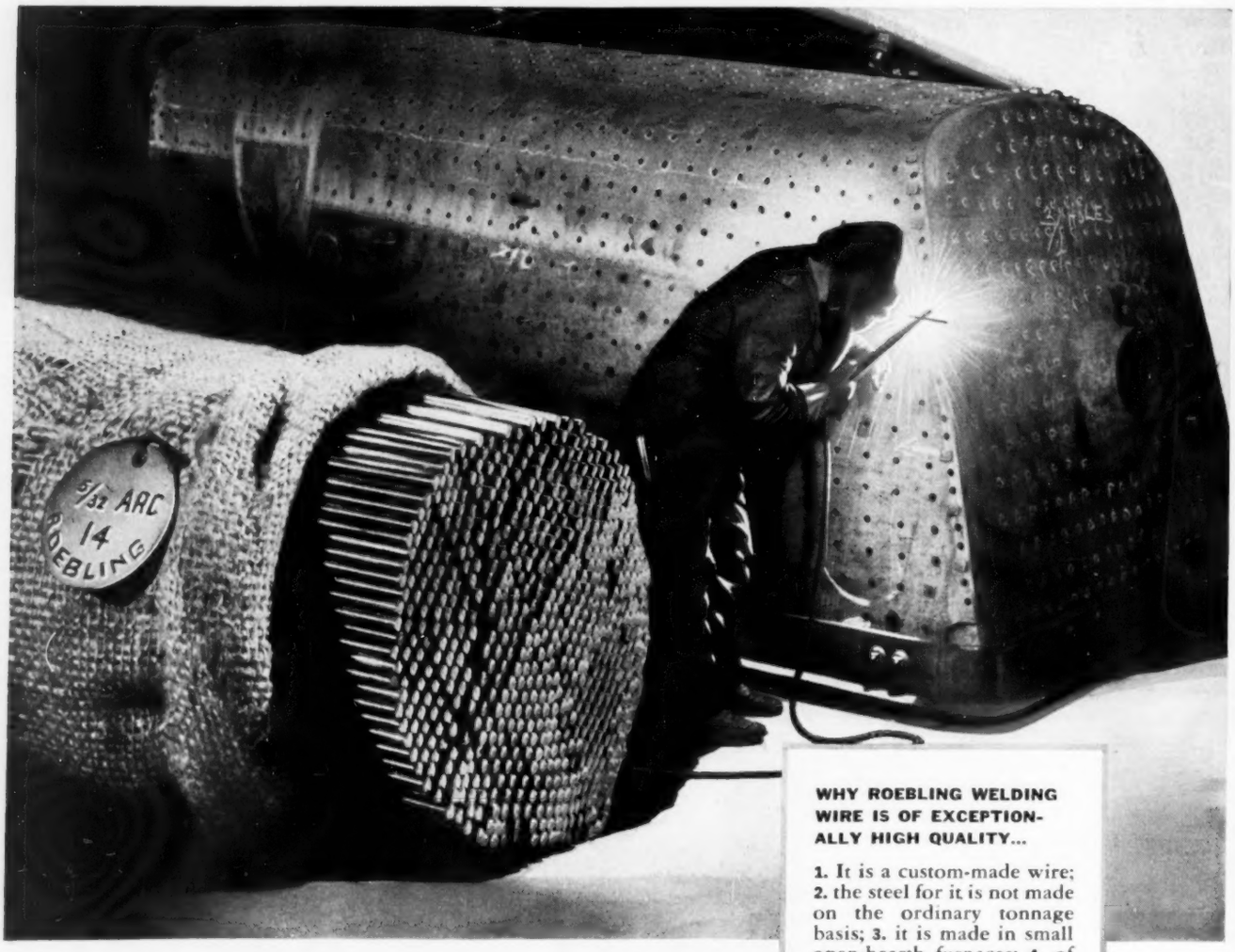

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ROEBLING

THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C BUELL JR.

Part V—Open-Hearth Furnace Lines

(Thirty-Eighth Article of Series)

IN A given furnace at stated operation the flow factor can be increased only by enlarging the areas A_1 over the bath. To how high a value the flow factor can be carried is difficult to state because the objections to a material enlargement may be numerous from both personal and mechanical viewpoints. In the usual uninsulated furnace the increase of the size of the furnace body might reach a point where added radiation losses would cancel the advantages to be secured but with a well-insulated furnace body, and the present and rapidly increasing knowledge of the use of insulation in this practice, such a design is entirely feasible. If mechanical plant limitations permit, a furnace having a flow factor of $F = 30$ or even more should be constructed readily while in new plant design. If this hypothesis is found sound by experience no limits to the ultimate should be presented.

How Open Hearths Are Rated

A stationery open-hearth furnace usually is rated as being of so many tons without further qualifications. This rating usually is arbitrary and merely indicates the probable molten metal holding capacity of the unit without any reference to productive capacity.

The numerical tonnage term when applied to a tilting furnace is descriptive for it usually is considered as a measure of tonnage of steel expected to be produced in 24 hours. However, melting in the tilting furnace is a continuous process while, in the stationary furnace it is an intermittent process. Thus, it is evident that with time included as an integral factor in the term, the figure of rating is at once a concrete expression of a definite value, whereas, if the time factor is omitted any figures of rating are worthless as bases of comparative valuation of the operation of furnaces.

To definitely indicate the faultiness of this method of designation in stationary practice consider two of the listed furnaces. Furnace I designed as a 150-ton furnace and furnace N designed as a 250-ton furnace. Operating records show furnace I to be tapping 180 tons in 11 hours, thus making steel at the rate of 16.36 tons per hour, and furnace N to be tapping 250 tons in 15½ hours, or at the rate of 16.13 tons per hour.

As will be shown later, the area of the bath of furnace I is about 642 square feet, and furnace N about 585 square feet, based on available dimensions of the bath elements of these units. The calculated nominal ingot capacities are: 162 gross tons for furnace I and 153 gross tons for furnace N, with the metal holding capacity in each case about 4 per cent higher.

Of the purely structural dimensions, the extreme length over the brickwork is 86 feet 3 inches for furnace I and 73 feet 10 inches for furnace N. Thus it will be seen that with equivalent method of measurements, the 150-ton furnace, I, is in all essential respects of larger size and capacity, with the sole exception that a larger tonnage of metal actually is charged into furnace N.

To produce 250 tons of ingots per heat in furnace N requires that the metal of the bath be approximately level with the top of the foreplate at tapping time with the slag in added depth above that. Were the same melting practice and measurement methods as are used in the plant containing furnace N employed in that containing furnace I, the latter might be rated at about 268 tons, while with conditions reversed furnace N would rate about 141 tons as compared to 150 for furnace I. The foregoing serves to illustrate and emphasize the lack of system and the inconsistencies of methods currently in use in rating stationary open-hearth furnaces in American practice.

In order to properly consider furnace capacity it will be necessary to follow a systematic method of determining the hearth dimensions as a basis of measurement because measurement methods are as varied as the furnaces.

For a consideration of bath lengths refer to Fig. 1. Examination of the baths on their longitudinal center line and the accompanying dimensions indicate most designers consider bath length as from the top of the end banks at their junction with the aprons. As may be seen from examination, the top of the end banks are from 5 inches to more than 20 inches above the foreplate line. Obviously, the only method of systematically measuring a bath should employ the foreplate line as the top plane from which all measurements must be taken because with a bath at 100 per cent of normal furnace capacity the top surface of the slag at tapping time should not be higher than the foreplate. Also, the design of the furnace laboratory and throat must be established from the plane of the foreplate line.

Most open-hearth operators, as will be shown later from figures of average tons produced from the various units, average up to 115 per cent of normal rated tonnage; five furnaces are operated regularly at from 137 to 163 per cent of normal rated tonnage. Though some steelmakers habitually operate their furnaces with the top of the molten steel even above the foreplate line and secure fair fuel results at high upkeep cost it would be unsystematic to establish the slag surface in these excessively charged furnaces as the basis of hearth measurement. Accordingly, the length and width of the baths are taken properly as at the foreplate line.

Judgement Dictates Bath Length

Examination of the bottoms of Fig. 1 will show clearly that the establishment of bath length is somewhat a matter of judgment as to how the top surface lines of the granular hearth material will develop. The values used are believed to be representative.

In plan, the ends of the baths are considered as developing as a semicircle. The actual development, however, is subject to several variables. Under operation and based on the examination of several bottoms, it is thought that the upper surface of the granular hearth material will develop about as shown in furnaces A, E, F, G, I, K and P. The bath volume constant to be discussed is developed from bottoms having such a contour.

On account of the general extension of the front wall banks (also the backwall banks in straight walled furnaces) to a point above the foreplate line the width of the bath is always materially less than the inside width of the brickwork. The figures of bath width as well as those of depth have been taken from Fig. 21. The bath dimensions of the several furnaces, modified in accordance with the foregoing, as well as the surface area computed as with the bath having semicircular ends are listed in Table LXIII. The ratio

of length to width also is shown. At present this ratio is considered of minor importance while but a few years ago its importance was emphasized.

Usually, the production of a furnace is reported in the term of tons of acceptable ingots and does not include pit and ladle losses. With good practice these losses should not exceed 3 or 4 per cent of the total bath metal. When designing the bath for steel capacity the total metal in the furnace is the proper basis of consideration.

Assuming a common 4 per cent pit and ladle loss in all cases here being considered the ingot production figures of Table LV should be increased appropriately. The figures of steel tapped are listed in Table LXIV with the addition of the figures of tons per hour produced. The latter figures are included in the tabulation here because as in periodic operation encountered in stationary open-hearth furnace practice, the hour is the most suitable unit of time.

Table LXIV

Steel Production and Time of Heats

Furnace	Rated capacity, tons	Average ingot output per heat, tons	Total steel tapped, tons	Average time of heats, hrs.—min.	Steel produced per hour, tons
A	150	150.0	156.3	12— 0	13.0
B	100	119.8	124.9	12—35	9.93
C	100	110.0	114.6	9— 0	12.74
D	100	113.8	118.6	12—58	9.16
E	125	154.0	160.5	13—59	11.47
F	150	.....	.....	.....	.....
G	130	132.0	137.6	11—25	12.05
H	120	123.0	128.2	12—18	10.42
I	150	180.0	187.6	11— 0	17.05
J	150	155.0	161.5	12—10	13.27
K	150	158.0	164.6	12— 0	13.72
L	150	150.0	156.3	11—30	13.32
M	200	215.6	224.7	16—53	13.30
N	250	250.0	260.5	15—30	16.70
O	300	300.0	312.5	16—30	18.97
P	200	220.0	229.0	17—12	13.43

Hourly Production Varies

The table indicates that while the rated tonnages, 100 to 300 tons, is in the order of 1:3, the hourly tonnage production, 9.16 to 18.97, varies within the approximate limits of only 1:2. If the present practice of arbitrarily rating furnaces as to tonnage were sound, then the hourly production would vary closely with the tonnage. But present practice of rating is archaic and misleading.

Having the area of the baths and the tonnage rates established two comparative values may be developed. The first is the often quoted but rather indifferent value of square feet of bath area per ton of steel. This is actually only a comparison of bath depth. The second is tons of steel per hour against a standard unit of bath area and which is conveniently 1000 square feet. Of the several comparative values discussed thus far, this latter value is by far the best indicator of comparative furnace production, although several important design and operation factors that bear on ultimate performance are absent. The figures are listed in Table LXV.

Given the square feet of bath area per ton of steel poured, as in the sixth column of Table LXV, the average depth of the molten metal in the bath may be found easily. Such figures offer a satisfactory basis of comparison as to the productive value of a shallow or deep bath. This relation is shown graphically in Fig. 54. Using a weight of 430 pounds per cubic foot as the weight of molten steel certain related figures are listed in Table LXVI.

Table LXV

Comparison of Tonnage, Bath Area and Productivity

Furnace	Rated tonnage	Actual Tonnage Output, Per heat	Actual Tonnage Output, Per hour	Bath area, sq. ft.	Sq. ft. per ton steel	Tons steel per 1000 sq. ft. bath per hr.	Square feet per ton steel per hr.
A	150	156.3	13.00	468.9	3.00	27.7	36.7
B	100	124.9	9.93	454.9	3.64	21.8	45.9
C	100	114.6	12.74	478.7	4.18	26.6	37.6
D	100	118.6	9.16	514.4	4.31	17.8	56.2
E	125	160.5	11.47	494.1	3.08	23.2	43.1
F	150	.....	.....	657.9	.....	.....	.....
G	130	137.6	12.05	500.6	3.64	24.1	41.6
H	120	128.2	10.42	503.9	3.93	20.9	48.4
I	150	187.6	17.05	641.7	3.42	26.6	37.7
J	150	161.5	13.27	681.1	4.22	19.5	51.3
K	150	164.6	13.72	641.7	3.90	21.4	46.7
L	150	153.3	13.32	653.0	4.26	20.4	49.0
M	200	224.7	13.30	576.2	2.57	23.1	43.4
N	250	260.5	16.70	585.1	2.25	28.5	35.0
O	300	312.5	18.97	776.5	2.48	24.7	41.0
P	200	229.0	13.43	599.5	2.62	22.4	44.7

In this table the furnaces are listed in the order of their production of tons of steel per 1000 square feet of hearth area, the figures originating in Table LXV, but omitting reference to furnace C. The square feet of hearth area per ton of steel also from Table LXV are shown and from these latter figures the average depth of molten steel in the bath is found from Fig. 54.

Better production rates, as will be noticed in Table LXVI are secured from the furnaces having the deeper baths. Four furnaces, A, I, G, and E fall inconsistently in the listing as to average depth of bath. With these four furnaces omitted, the balance of the listing is a most emphatic proof of the greater productive value of the deeper bath. Local conditions of operation likely are responsible for the inconsistent findings in this respect in the case of the four exceptions. Operators producing steel from the furnaces with the deeper baths are unanimous in the opinion that deepening the bath without increasing its surface area brings about a relatively larger production with less loss of metallics and giving lower operating costs with easier bottom maintenance than the same furnace with a shallower bath.

Advantages of Deep Bath

The foregoing convincing proof that the deeper bath is the better productive medium substantiates the figures developed in the chapters on bottoms in which it was shown that on account of the high conductivity of the molten metal and its consequent lack of resistance to heat flow, only a few degrees difference in temperature actually is required between the shallowest and deepest bath for equal heat transference.

Steelmakers should not assume that by deepening the bath only, much increased production at equal fuel rates will follow. Probably such will not be the case because the increase of fuel and gaseous fluid volumes will necessitate careful major redesign of the furnace. As a matter of fact several of the furnaces listed having deep baths would have operations much benefited by a considerable redesign.

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bath design, is its depth which governs the volume, and thus its holding capacity of molten steel. The first consideration of the depth is the required volume which is dependent, first, on the tonnage of steel it is desired to tap, and, second, on the density of a steel having the specified analysis when tapped at a suitable temperature.

The value for molten steel is assumed throughout this treatise at 430 pounds per cubic foot. Taking the tapping temperature of 0.60 to 0.80 per cent carbon steel of about 2820 degrees Fahr. as a low and the tapping temperature of ingot iron of possibly 3000 degrees Fahr. as a high, the figure used is a good average. For those who care to work to other conditions the chart, Fig. 55, is offered.

This illustration has been adapted from a chart and data offered by Hruska*. While its development largely is empirical it appears to have some value. In this the curve E-E is taken to give the temperature, density relation of steel, iron = 99.88; carbon = 0.12 per cent. The curve F-F is presumed to represent steel which contains the maximum of contamination of the iron which is produced as steel in tonnage open-hearth furnace practice.

Conforms to Requirements

The interpolated mean of these curves probably will meet most requirements. To use the chart enter scale A at the appropriate carbon value and draw a horizontal line intersecting the appropriate diagonal representing the tapping or other temperature. A vertical line then is projected to an appropriate termination within the limits of curves E-E and F-F. A horizontal line to scale C will give the density of the molten metal while a line from the intersection of the last projected horizontal line and the dotted factor line G-G, drawn vertically to scale D will indicate the weight of the molten metal per cubic foot.

Provides Room for Slag

With the molten steel quiet as when ready for tapping the surface of the steel should be about 6 inches below the foreplate line if the furnace is producing its normal tonnage. This leaves a reasonable volume available for slag without encroaching on the laboratory volume above the foreplate line.

During the boils the volume of steel will expand through gas and temperature action to at least one and a half times its normal volume and this increase may be as much as two and one-half times if a high-ore process is used. This increase in bath volume causes an equal decrease of laboratory volume. If in the desire for excessive production from a furnace the normal metal line is raised and the doors dammed excessively, the increase of the bath volume during the reactions may cause excessive furnace gas velocities and from them a slow working furnace with high fuel and upkeep costs.

Where Metal Line Terminates

A surface 6 inches below the foreplate line should be and is considered the normal line of metal from which the bath is designed and its normal capacity computed.

The contingencies of open-hearth furnace operation are such that the profile of the bottom and thus the steel holding capacity constantly is changing from heat to heat, and even though the designed capacity is maintained for a few heats considerable variation in tonnage figures will develop.

Calculations from a number of furnace bottoms, show that for furnaces of 100 to 150 tons a capacity factor of about 55 per cent ultimately will develop and thus the area of the bath surface multiplied by the depth of the bath and this volume multiplied by 0.55 will give the approximate holding capacity in cubic feet.

The volume factor will be somewhat greater with shallower baths and somewhat less with deeper baths. However, 55 per cent is a reasonable mean figure. The volume in cubic feet available for slag between the surface of the metal and the foreplate line is considered as one-half the area in square feet.

(To be Continued)

*Finishing the Heat of Steel, by J. H. Hruska, *Blast Furnace & Steel Plant*, January, 1933, page 45.

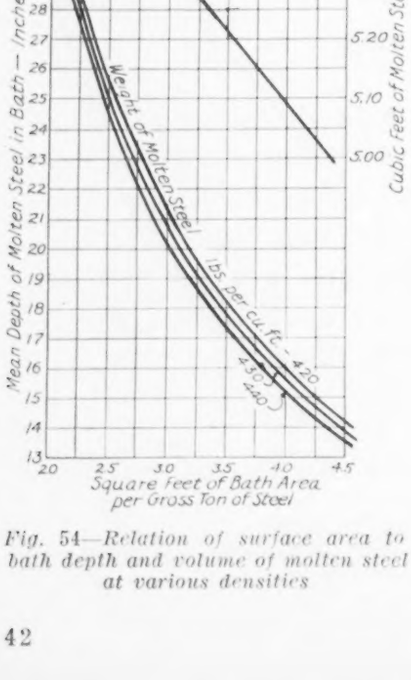
Weight of Molten Steel-lbs per cu. ft.
420 430 440
Mean Depth of Molten Steel in Bath — Inches
Cubic Feet of Molten Steel per Gross Ton
Weight of Molten Steel lbs. per cu. ft. 420
430
440
Square Feet of Bath Area per Gross Ton of Steel

Fig. 54—Relation of surface area to bath depth and volume of molten steel at various densities

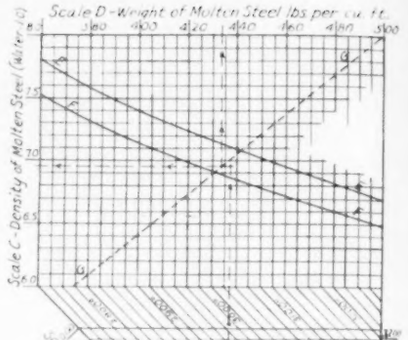
Scale D-Weight of Molten Steel lbs per cu. ft.
Scale C-Density of Molten Steel (Water=1)
Scale A-Carbon in Steel Parts of
Scale B-Temperature of Molten Steel Deg. Fahr.

Fig. 55—Chart showing density and weight of molten steel at varying carbon content and temperature

Table LXVI

Comparative Productivity of Open Hearths

Furnace	Sq. ft. hearth area per ton	Sq. ft. hearth area per ton per hr.	Tons per 1000 sq. ft. per hr.	Mean depth of bath, in.
N	2.25	35.0	28.5	27.80
A	3.00	36.7	27.7	20.75
I	3.42	37.7	26.6	18.65
O	2.48	41.0	24.7	25.25
G	3.64	41.6	24.1	17.10
E	3.08	43.1	23.2	20.40
M	2.57	43.4	23.1	24.25
P	2.62	44.7	22.4	23.75
B	3.64	45.9	21.8	17.10
K	3.90	46.7	21.4	16.00
H	3.93	48.4	20.9	15.95
L	4.26	49.0	20.4	14.75
J	4.22	51.3	19.5	14.80
D	4.31	56.2	17.8	14.50

Steel Manufacturers Group Publishes New Standards

The Association of American Steel Manufacturers Technical Committees, 616 Investment building, Pittsburgh, has published two pamphlets and two leaflets dealing with manufacturers' standard specifications.

Subjects covered in the pamphlets are "Chemical Composition and Quality Classifications for Carbon Steel, Semifinished Rolled Products, Forgings and Hot Rolled Bars," and "Manufacturers' Standard Specifications for Wire and Wire Rods in Coils." The leaflets cover "Standard Permissible Variations in the Size and Length of Hot Rolled Bars and Weight of Bar Size Shapes," and "Permissible Variations in Thickness, Length, Width, Flatness and Camber for Plates Over 2-inches Thick."

Cite Inequalities In Power Rates

(*Concluded from Page* 30)

flect a charge upon investment or even appraised valuation, but seemed rather to be a penalty clause. The practice of applying the demand charge as a percentage of the previous month's account was deprecated and it was pointed out that no credit applied against this demand charge in cases where conditions were favorable to users of current.

J. B. Allan, International Harvester Co., Chicago, chairman of the meeting, urged that long term power contracts running over a period of 5 to 10 years should be avoided. He recommended a period of from 1 to 3 years, with a 30-day cancellation clause. The survey showed that the average cost per kilowatt-hour per average load was $0.0103.

The representative of a large foundry interest in northern Indiana quoted a comparison made in 1929 with a demand of 1456 kilowatts and energy of 6200, showing variation in different districts. With 79.7 power factor, a bill was figured which in Detroit showed $2884 demand charge against a total billing of $7846. In northern Indiana the demand charge was $1669, in Pittsburgh $927.50 and in Wheeling, W. Va., $3375. A similar disparity in about the same relation was shown in 1932. At that time the power cost of $32.50 per ton was figured against steel castings sold at about $120.00 a ton.

Construction, operation and application of small cupolas, up to and including those 27 inches in diameter inside the lining, were described by D. J. Reese, Whiting Corp., Harvey, Ill., in one of the several shop operation courses held during the meeting.

Larger cupolas usually are found in American foundries and as a result practically all published information on this subject has been concerned with the larger sizes. Small cupolas have been used extensively for many years in European foundries with satisfactory results for melting comparatively heavy tonnages of iron.

Consider Effects of Alloying Elements on Steel Castings

EFFECTS of alloys on steel castings were discussed in four papers presented at a symposium on steel castings. Jerome Strauss, Vanadium Corp. of America, Bridgeville, Pa., described the effects of vanadium. J. H. Critchett, Union Carbide & Carbon Research Laboratories Inc., New York, discussed the effects of chromium. H. W. Gillett co-author with J. L. Gregg, Battelle Memorial institute, Columbus, O., spoke on molybdenum; and application and effects of nickel engaged the attention of A. G. Zima, International Nickel Co., New York.

Scope of the vanadium paper may be inferred from the following subheads: Influence of vanadium on the *as cast* condition, response to simple heat treatment, carbon-vanadium steels, nickel - vanadium steels, chromium-vanadium steels, manganese-vanadium construction steels, special vanadium steels, annealed castings, quenched and tempered castings, molybdenum - vanadium steel for centrifugally cast guns, behavior of steels as heavy castings, properties at subnormal temperatures, properties at elevated temperatures, cast tool steels, applications for corrosion and heat resistance.

The chromium paper dealt with castings containing 1 to 3 per cent chromium used for structural parts, castings containing from 4 to 7 per cent used where both structural and certain corrosion problems must be met, and special high-chromium corrosion-resistant steels.

According to the speakers on molybdenum, a considerable quantity of this alloy is required in a straight carbon-molybdenum steel to produce a high-strength product comparable by the conventional physical tests to some other fairly low alloy steels. Because of cost, the plain molybdenum steels ordinarily are not used where static figures alone determine their suitability. However, many of the inherent properties conferred on steel by molybdenum are shown as the result of the addition of small amounts with great static improvement if used in conjunction with other alloys.

An Asset to Foundrymen

The readiness with which molybdenum fits in with other alloying elements to produce steels high in physical properties when quenched and tempered, the added ease and certainty in hardening throughout in quenching produced by molybdenum and the ability to remove casting strains by a high-temperature draw without softening castings too much, make the element an asset to both foundrymen and casting users.

Typical nickel steels and some of the uses to which they are applied were discussed in Mr. Zima's paper under the following heads: Low-carbon 2 per cent nickel steel, medium-carbon 2 per cent nickel steel, pearlitic nickel-manganese steels, nickel-chromium steels, some special nickel-chromium steels, nickel-vanadium steels, nickel-molybdenum and nickel-chromium-molybdenum steels, abrasion resistant castings, austenitic nickel-manganese steels, and steel castings for elevated temperature service.

Requirements Classified

The text covered the following features on an almost infinite variety of castings: Requirements, typical applications, type and composition of steel. For example: Superior mechanical properties in normalized steel castings, light and medium sections; oil well tools, sheaves, sprockets, tractor shoes, gears, cams, etc.; nickel-chromium steel, carbon 0.30-0.40, nickel 1.25-1.50, chromium 0.70-0.90, and manganese 0.60-0.90 per cent.

A detailed description of the installation, constructional features and operation of a coreless induction furnace in the laboratory of the General Electric Co., Schenectady, N. Y., prepared by W. E. McKibben, was presented at the steel roundtable meeting. On 170-pound scrap charges the kilowatt-hour-consumption is about 850 per ton and the time for a heat about 1¼ hours.

F. A. Melmoth outlined activities of various committees and referred to the wide variety of steels in existence. He defended his views on a previous occasion touching on the advisability of appointing a publicity committee under the auspices of the A. F. A. whose duty it would be to refute propaganda issued by competitive interests decrying the value of steel castings.

In presenting his report of the committee on classifications of steel for castings, R. A. Bull, Electric Steel Founders' Research Group, Chicago, stated the work is well in hand and that the committee favored the inclusion of the material in the proposed A. F. A. handbook. Tentatively steels have been divided into ten main classifications and a proposed system contemplates a double-word reference to indicate if necessary the alloy and physical properties of each classification.

Report of the joint committee on effects of phosphorus and sulphur in steel indicated that phosphorus reduces tensile strength, but that the deleterious effects of sulphur have been over emphasized.

"THANKS TO YOU...OUR *Stockings* KEEP A *Step Ahead* OF THE STYLE!"

An interview with Mr. S. E. Summerfield, President of Gotham Silk Hosiery Co., Inc., Makers of Gotham Gold Stripe Silk Stockings

Q. *Mr. Summerfield, you make 19 styles of Gotham stockings in 6 sizes and put out 16 colors, a total of 1824 different units. How do you manage it?*

A. Sales records regulate style production, and modern all-Monel Metal dyeing machines make our 24 hour delivery service possible.

Q. *Monel Metal?*

A. Gotham Gold Stripe merchants are always sending in rush orders for a wide variety of different colors. And always want 'em over night. So we often have to dye big batches of stockings *promptly* or we couldn't fill our orders. Monel Metal seems to have been *made* for our dyeing machines. Its polished surfaces haven't harmed the delicate fabric of our sheerest stockings once in the 15 years we have used it. Besides, it's a big time-saver...We can change over quickly from one color to another because Monel Metal is not affected by the dye and it's easily cleaned. Just a matter of minutes.

Q. *Doesn't that kind of service cost a lot of money?*

A. Plenty...but it costs only one-third as much as dyeing with our former old-fashioned equipment. And so we're able, even with today's demand for speed, to give the public much better stockings than would be possible if it weren't for Monel Metal.

Monel Metal helps many another industry to speed processes and cut costs. It brings to many a home cleanliness and beauty. Its silvery sheen, cleanliness, great strength, toughness, corrosion-resistance and immunity to rust are ideal qualities for kitchen sinks and cabinet tops, table and range tops and hot water tanks.

You find Monel Metal used in industry for food handling equipment of every kind, in hotels, restaurants and hospitals; in canneries and packing plants; for machinery of all sorts in laundries, chemical and power plants . . . in fact, most industries appreciate that no other metal has its unique combination of qualities.

The chances are that there are valuable but undiscovered uses for it in your own business. Drop us a line and let us tell you how others in your particular field have taken advantage of Monel Metal.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

MONEL METAL

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

Foundry Show Demonstrates Improvements in Equipment

THE exhibit of foundry equipment and supplies held last week in the Stevens hotel, Chicago, along with the annual convention of the American Foundrymen's association was the most successful of the restricted shows in the history of the association. It was particularly noteworthy in demonstrating in striking fashion the improvements in equipment and supplies introduced since the last show two years ago.

Outstanding in last week's show were several new developments in molding machines, two brand new and one greatly improved core blowing machines, a new device for cleaning castings by using centrifugal force to throw the abrasive against the castings; a number of important improvements in sand conditioning equipment; a new apparatus for separating and cleaning abrasive materials; three new types of dust arresting and collecting equipment; noteworthy displays of material handling equipment, and one new line in this classification; and a wide variety of new developments in foundry supplies.

Sales Are Reported

Attendance at the show was gratifying and interest in the equipment and supplies displayed was attested by substantial inquiries and some actual sales.

Interest displayed in recent years in the use of compressed air for blowing sand into coreboxes was illustrated by the fact that three companies exhibited machines for that work. A new type of core blowing machine was operated by Osborn Mfg. Co., Cleveland. An auxiliary machine for removing the corebox from the finished core was shown in addition. It is claimed the blowing machine also may be employed for filling flasks with molding sand. This company also exhibited a new and improved type of jolt squeeze machine in which the squeezing head is attached to the upright main post and may be swung out of the operator's way.

Among the many improvements in the machine shown by Wm. Demmler & Bros., Kewanee, Ill., is the use of a crank handle on one side for operating the corebox table. This takes the place of the former nut. An automatic air valve controls the movement of the sand hopper. A single setting of the valve moves the hopper over the corebox, admits the air and sand and then moves clear. A mixer on top keeps the sand in the reservoir agitated.

The International Molding Machine Co., Chicago, displayed a new core blowing machine in which the corebox table is adjusted for various size boxes by a handwheel underneath and by a quick moving lateral adjusting device. An operating valve automatically controls the complete sequence of operations. The company also displayed a jolt strip molding machine.

A large jolt machine was shown by Herman Pneumatic Machine Co., Pittsburgh, also a second large rollover machine of similar type equipped with a short roller landing table from which the finished mold can be pushed on to a conveyor without lifting by hand or crane. Both these machines are equipped with the special control valve developed by the Herman Co., for regulating the number and force of the jolts imparted to any given mold.

By moving pictures, Beardsley & Piper Co., Chicago, showed various types of foundry interiors where its sand slinging machine is employed. A large jolt rollover, a smaller plain jolt rollover foot draw machine, a small core rollover machine, also a number of snap flasks and reinforced slip flasks, were shown by the Arcade Mfg. Co., Freeport, Ill.

W. H. Nicholls Co. Inc., Richmond Hill, Long Island, N. Y., showed three heavy-type combined jolt squeeze machines. The largest of the three is designed to squeeze and jolt heavy molds. The jolt cylinder, squeeze cylinder and housings are cast in one piece of high-strength semisteel.

Embody Oilless Bearings

Outstanding features of several machines shown by Tabor Mfg. Co., Philadelphia, included oilless bearings on various moving parts, and sets of oil valves for regulating the rollover and pattern drawing movements by oil instead of air. Machines in which these features were displayed included a jolt rollover pattern draw machine, a jolt rollover core making machine, and a jolt squeeze machine with a head which may be moved out of the way.

Several improved features in materials and design were shown in the sand mixing machine displayed by Royer Foundry & Machine Co., Wilkes Barre, Pa. Sand thrown into a hopper falls on to a rapidly moving belt which disintegrates, aerates and throws the sand forth in condition for use.

A 6-foot pan mill equipped with pneumatically-operated doors leading to aerator attachments at either side of the bottom, also a new type center pedestal in which all bearings operate in an enclosed oil bath, were shown by National Engineering Co., Chicago. A large rotary-type sand mixer was shown by Standard Sand & Machine Co., Chicago. Vibrating screens designed for the preparation of molding and core sands were shown by Niagara Concrete Mixer Co., Buffalo, and by Production Equipment Co., Chicago.

New developments in equipment for cleaning castings provided an interesting feature of the show. American Foundry Equipment Co., Mishawaka, Ind., operated a continuous-type cleaning unit equipped with its latest development, a device for throwing the abrasive against the casting by the centrifugal process. The company also exhibited a new tubular-type dust arrester.

Shows Abrasive Separator

W. W. Sly Mfg. Co., Cleveland, operated a new abrasive separator designed to give three distinct separations, including the return of clean abrasive to the pressure blast tank. The separation is accomplished by an air wash and the equipment is adjustable to a wide variety of conditions. The unit is equipped with a new elevator device and is driven with V belts.

Macleod Co., Cincinnati, showed a blast pressure tank, an oil burner for lighting cupolas and drying ladles, a blacking spray and a small torch for skin drying molds. The company also exhibited a series of photograps showing sandblast tables, cabinets, tumbling type blast units, and dust arresters.

Pangborn Corp., Hagerstown, Md., exhibited a new bag-type dust arrester unit which was provided with glass ends to permit observation of the operating mechanism. The company also displayed several of the individual screen sections, two new air ventilated helmets with air purifying and washing equipment, new long-life nozzles, steel abrasives, sandblast hose and accessories.

Carborundum Co., Niagara Falls, N. Y., provided a beautifully colored display showing a variety of grinding wheels applicable to foundry work.

Several types of melting equipment were represented. Detroit Electric Furnace Co., Detroit, provided an interesting display of a wide variety of castings poured from steel, iron and nonferrous metals melted in the indirect arc, rocking type electric furnace. Ajax Electric Furnace Corp., Philadelphia, and the Ajax Electrothermic Corp., Trenton, N. J.,

(*Please turn to Page* 67)

Windows of Washington

(*Concluded from Page* 14)

submarines, 700 tons each, and 2 gunboats, 700 tons each, or a total of 24,000 tons.

This naval program, to be spread over 3 years, is expected to provide work for 14,000 men in public yards and 12,000 in navy yards, with an equal number affected in the various supply and equipment industries—a total of 52,000, according to Secretary of the Navy Swanson.

For "garden homesteads," hitherto referred to as "subsistence homesteads," little steel will be needed. Army engineers will buy considerable piling, it is presumed, for river and harbor work.

The $2,000,000,000 to be made available for work in the states may revive such projects as the Thirty-eight street tunnel in New York, estimated at 150,000 tons. At this distance, a minimum requirement of 1,000,000 tons would seem a safe estimate. It might be twice that.

HAVING tasted blood in his bout with the cement industry, Secretary Ickes, as the cabinet officer presiding over the public works section of the recovery act, looms a formidable figure for other industries.

On 400,000 barrels of cement for Boulder dam (Hoover dam to Republicans) Secretary Ickes pounded the price down $52,000 or 13 cents a barrel. The price accepted from the four California cement companies is $1.40, f.o.b., 13 cents below the original bid.

Some 3,600,000 barrels remain to be bought for this job, indicating a total saving to the government of about $520,000. One threat of Secretary Ickes was for the government to go into the cement manufacturing business.

The fervent hope of other supply industries is that the steel, cement and other materials required for the $2,000,000,000 worth of building projects will be purchased by the contractors. There will, of course, be some government check on the prices of materials, and the possibility remains that other industries than cement may have to face Secretary Ickes.

GENERAL JOHNSON may state unequivocally that his organization will not be used to force open shop industries into permitting unionization of their employes, but he also states with equal emphasis that section 7 (a) of the recovery act is the law and he will enforce it.

The American Federation of Labor knows section 7 (a) forward and backward, and this specifically gives employes the right to organize for the purpose of collective bargaining.

While the Federation is making no public announcement of its program, it is believed that it has created machinery for the purpose of utilizing the collective bargaining provisions of the law. There is some reason for believing that the greatest effort will be put into a movement to organize the automotive industry, with headquarters at Detroit, but Federation offices are being opened in various steel centers.

The tactics of the Federation appear to be to give employes of open shop industries an opportunity to organize. The situation may arise where a new union within a plant may contest the right of an employe representation council to speak for labor in that plant.

Heretofore the organization work of the Federation has proceeded along vertical lines, that is, by crafts. In such industries as iron and steel and the automotive, it seems likely that the initial effort will be to organize horizontal groups in the various individual plants. Ultimately, these would break down into crafts.

Last week the metal trades department of the Federation set up an industrial council composed of representatives of all affiliated international unions, this council to be permanent and to function in every matter connected with the recovery act so far as the metal trades are concerned. The organization work contemplated by the Federation will be done by another group.

The opinion of one high official of organized labor is that the new company unions or employe representation plans now being organized will "disappear like hoarfrost." Labor's representatives who sit in hearings on trade codes will test every company plan for sincerity.

General Johnson, in outlining basic principles for trade codes, states definitely that "it is not the function of the administration to prescribe what shall be in the codes . . . or to compel the organization of either industry or labor. * * *Basic codes containing provisions respecting maximum hours of labor, minimum rates of pay and conditions of employment, which are in themselves satisfactory, will be subject to approval, although such conditions may not have been arrived at by collective bargaining."

For this broad interpretation, General Johnson was called Thursday before his labor advisory council, which apparently will act as a bulwark for labor. The iron and steel code probably will be the first of the open-shop industries to run the gauntlet.

RECONSTRUCTION Finance Corp. has announced the following loans for self-liquidating projects;

Tekamah, Nebr., $600,000 for drainage etc.

Phillipsburg, Pa., $40,000 water supply system; 3.2 miles of cast iron distribution mains. Also cast iron pipe.

Springville, Ala., $16,000 waterworks system; 100,000-gallon steel reservoir and 20,275 feet of cast iron mains and laterals.

Loan of $1,100,000 to organize subsidiary of Todd Shipyards Corp., New York, to construct a ship repair and dry dock plant at Houston, Tex., ship canal.

East Lyme Water Co., East Lyme, Conn., $100,000 for new waterworks; cast iron pipe.

Honaker, Va., $25,000 for new waterworks.

Midway Waterworks Co., Midway, Utah, $6000 to replace wood stave water mains with cast iron pipe.

Elk Rapids, Mich., $10,000 for new pumping station.

Santaquin City, Utah, $22,000 to replace five miles of wood stave pipe with cast iron pipe.

Neptune Utilities Inc., Atlantic Beach, Fla., $7500 to improve water system.

Wildwood, N. J., $325,000 to improve waterworks system; 2937 tons 24-inch cast iron pipe; 342 tons 16-inch, 265 tons of 14-inch, 281 tons 12-inch, and 500 feet 24-inch flexible joint cast iron pipe.

Eau Clair, S. C., $67,500 to improve water supply system.

A GOVERNMENT loan enabling the Amtorg Trading Corp. to buy materials for Russia in this country, including machinery, would surprise no one in Washington. . . . Myron C. Taylor being unable to serve on Secretary Roper's long-range advisory committee, some other United States Steel Corp. executive will be substituted. . . . Prof. C. K. Leith, authority on iron ore, of the University of Wisconsin, is on the Roper committee, as is R. E. Flanders, of the Jones & Lamson Machine Co. . . . Postal receipts, which are considered a good gage of business, showed an increase of 15 per cent in the week ended June 16 over the same week of 1932 for the 12 largest offices. . . . The David Taylor Co., New York, has proposed to the tariff commission that the duty on tungsten and ferrotungsten be reduced.

No Accident in Year

The mechanical department of the Cambria plant of the Bethlehem Steel Co. has operated since May 25, 1932, without a lost-time accident, according to the metals section of the National Safety council. This department has a record of more than 1,100,000 man-hours of exposure. The units covered by this department include machine shops, foundry, smith shops, brick masons, riggers, floating labor, painters, plumbers, etc.

Expect Price Decision This Week; Steel Rate Up

Producers Leaning to Conservative Policy, with Wage Advances Due First—Operations Now at 51 Per Cent, with Large Sales of Heavy Finished Material

PREDOMINANT conservative opinion among iron and steel executives appears to be rallying to the position of the industrial recovery administration that price advances be deferred until after wages have been raised.

This week when executives meet in New York to consider the iron and steel industry's trade practice code a determination of prices is expected. In the meantime, the intrinsic strength of the markets, regardless of any artificial support, is manifest in isolated advances, such as 50 to 75 cents a ton on coke, $5 a ton on rivets, and short-range selling on other products.

This underlying firmness, little due to anticipation of higher prices, is reflected in a rise of 2 points in the steelworks operating rate last week to 51 per cent, and the certainty that a further gain will be recorded this week. Pig iron corroborates this gain in steel production, with resumption of four more blast furnaces.

Last week 5-point advances were made in the steelworks rate at Chicago, to 50 per cent; at Pittsburgh, to 41 per cent; and in eastern Pennsylvania, to 33½ per cent. In the Buffalo district the rate increased 11 points to 48 per cent; and in New England 10½ points to 81½ per cent. The Wheeling district remained at 84 per cent; Cleveland at 79; Youngstown, 52; Birmingham, 50; and Detroit, 38. Tin plate mills average 95 to 100 per cent.

Pending a decision on prices, hot-rolled strip steel is being sold through the third quarter at the recent advance of $2 a ton. Wire rods, wire, and nuts and bolts are being booked for July, with delivery to Aug. 15, at present prices. Leading producers of plates, shapes and bars are quoting current levels for July, with clauses protecting them on wage advances. Tin plate makers are understood to be reaffirming prices for third quarter. Some of the lake pig iron producers now decline to quote for delivery beyond July.

Action in heavy finished steel is more vigorous. Structural shape awards for the week, 17,373 tons, include 4600 tons for the Pennsylvania railroad's Baltimore pier. Southern Alkali Corp., a subsidiary of the Pittsburgh Plate Glass Co., has placed approximately 20,000 tons of cast and steel pipe and structural shapes, and is negotiating for 2000 tons of plates for a chemical plant at Corpus Christi, Tex.

Bids will be taken July 26 on 17 naval vessels, the first group of 32 authorized, and for these 40,000 tons of steel will be required, mainly plates. A program for oil tank construction contemplated at New York will require 40,000 tons of steel. For the San Francisco-Oakland bridge substructure 7500 tons of plates have been awarded; and for the Boquet canyon penstock, Los Angeles, 4300 tons of plates. Pittsburgh mills have taken 6000 tons of plates for two freighters for H. H. Bull & Co., New York.

Railroads are concentrating purchases for repairs to rolling stock and bridges, releases for these purposes increasing substantially. In some districts a shortage of cars for shipping scrap is noted. Inquiries for farm implements for fall delivery show further improvement.

Pig iron stocks at both merchant and steelworks furnaces have been so far reduced that several more stacks will be lighted before the close of June. A strong demand for basic iron has developed in the East, one consumer purchasing 9000 tons. Wage and price advances in coke have led to heavier shipments.

This country again increased its favorable trade balance in iron and steel in May, when exports rose 23 per cent to 123,069 gross tons, largest since October, 1930. Imports dropped 6 per cent to 26,295 tons.

STEEL's iron and steel price composite is up 8 cents this week to $28.83, on stronger plate prices; the finished steel composite has advanced 20 cents to $45.50; and the scrap figure is up 4 cents to $9.70.

Composite Market Averages

	June 24	June 17	One Month Ago May, 1933	Three Months Ago Mar., 1933	One Year Ago June, 1932	Ten Years Ago June, 1923
Iron and Steel Composite	$28.83	$28.75	$28.45	$28.35	$29.54	$46.46
Finished Steel Composite	45.50	45.30	45.10	45.60	47.64	68.33
Steelworks Scrap Composite	9.70	9.66	9.23	6.47	6.62	18.30

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	June 24, 1933	May 1933	March 1933	June 1932
Pig Iron				
Bessemer, del. Pittsburgh	$17.26	16.66	15.76	15.95
Basic, valley	15.00	14.40	14.00	14.50
Basic, eastern, del. eastern Pa.	16.19	15.69	13.50	14.50
No. 2 foundry, del. Pittsburgh	16.76	16.16	15.76	16.01
No. 2 foundry, Chicago	16.00	15.90	15.50	16.00
*Southern No. 2, Birmingham	12.00	12.00	11.00	11.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del., Phila.	16.76	16.26	13.76	14.76
Malleable, valley	15.50	14.90	14.50	14.50
Malleable, Chicago	16.00	15.90	15.50	16.00
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	16.63	16.03	15.63	15.63
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	74.99
Coke				
Connellsville, furnace, ovens	2.00	1.75	1.75	2.00
Connellsville, foundry, ovens	2.75	2.25	2.25	3.00
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00

*1.75-2.25 silicon. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

	June 24, 1933	May 1933	March 1933	June 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.65	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.50	1.60	1.60
Tank plates, Philadelphia	1.54½	1.49½	1.59½	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.65	1.55	1.55	1.70
Sheets, No. 24, hot ann., Pitts.	2.10	2.00	2.00	2.20
Sheets, No. 24, galvan., Pitts.	2.70	2.70	2.60	2.85
Sheets, No. 10 blue anneal., Chi.	1.80	1.75	1.70	1.85
Sheets, No. 24 hot ann., Chicago	2.25	2.20	2.15	2.35
Sheets, No. 24 galvan., Chicago	2.85	2.85	2.75	3.00
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	1.85	1.85	1.85	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$11.75	11.65	8.75	9.00
Heavy melting steel, eastern Pa.	9.50	9.04	6.50	6.25
Heavy melting steel, Chicago	9.00	8.70	5.25	5.60
No. 1 wrought, eastern Pa.	10.25	10.25	6.75	6.25
No. 1 wrought, Chicago	8.10	8.10	5.00	5.00
Rails for rolling, Chicago	10.25	10.25	7.95	7.75

Sheets

Heavy Tonnage Specified as Price Advances Impend—Shipments To Extend Through July

SHEET PRICES, PAGE 49

Pittsburgh — Higher prices on sheets for third quarter are discussed but buyers have been specifying so heavily on second quarter obligations that the interest is partly speculative. Most sheet tonnage is being shipped as soon as mills can produce it. A Milwaukee interest has been actively soliciting western Pennsylvania galvanized sheet business at prices reported beneath the present market. The general asking price on galvanized sheets is 2.70c, Pittsburgh, with black sheets 2.10c, and blue annealed 2.50c. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has closed on an order for air conditioning equipment for the Shoreham hotel, Washington.

Cleveland—Prices for new contracts have not been announced, except in a few instances where sheetmakers have offered to book for third quarter at advances of $3 to $4 a ton, plus a clause protecting them in the event wages or freight rates are advanced. Consumers are reluctant to close at these figures before the general market becomes more clearly defined. Meanwhile, there is a rush to get under cover at present prices, and it is apparent that mills will not be able to fill all orders by July 15. Some deliveries will extend through July. Sheetmakers have been unable to gage just how much of this business is being done on price, and how much for actual requirements. Sheet mills here and in an adjacent lake district continue at full capacity. Automotive and refrigerator demand shows no indication of a letdown; stove and other household equipment requirements actually show improvement.

Boston—Spot buying of sheets has improved, but uncertainty as to prices has held up advance covering. Three New England depots are included among delivery points for 1030 tons of black, flat galvanized and corrugated galvanized sheets for the navy; bids June 27.

New York—Sheet sellers who have been quoting prices on hot-rolled material for third quarter subject to wage conditions have withdrawn their tentative figures. Few prices now are out for specifications beyond June 30. Naming of prices to apply probably for a limited period is expected this week. Meanwhile, consumers are specifying substantially.

Philadelphia—With many contracts due to expire June 30, sheet releases are substantial. Not in all cases will consumers take their full quotas but many buyers will take more than originally contemplated. No. 10 hot rolled is being quoted at 1.65c, Pittsburgh; black at 2.25c; and galvanized at 2.85c, these prices being named for the entire third quarter, subject to revision if labor costs advance. The Pittsburgh-Philadelphia freight rate is 31 cents.

Buffalo—Sheet mills here have increased operations to 75 per cent. Bookings indicate continuation at a high rate for at least a month.

Cincinnati — Sheet mills in this district have increased production to 60 per cent to prevent delays in shipments. Most of the current galvanized shipments are at the contract price of 2.70c, but new spot business is 2.85c, base, Pittsburgh.

St. Louis—Producers and distributors of sheets report a decided improvement in business. Volume has picked up and is more diversified than in many months.

Birmingham, Ala.—All sheet mills here are operating and shipments are steady. The outlook is brighter.

Mami-Holliday Steel Co., Indianapolis, has changed its name to Mami Iron & Steel Co.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.50c to 1.65c
Chi. dist. mills	1.60c to 1.75c
Chicago, del.	1.65c to 1.80c
New York, del.	1.75c
Birm., base	1.65c to 1.80c
Philadelphia, del.	1.71c
St. Louis, del.	1.84c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.65c to 1.80c
Chi. dist. mills	1.75c to 1.90c
Chicago, del.	1.80c to 1.95c
Phila., del.	1.96c
New York, del.	2.00c
St. Louis, del.	1.99c
Birm., base	1.80c to 1.95c
San Fran., c.i.f.	2.12½c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.10c to 2.25c
Chi. dist. mills	2.20c to 2.35c
Chicago, del.	2.25c to 2.40c
New York, del.	2.45c
Phila., del.	2.31c to 2.41c
Birm., base	2.25c to 2.40c
St. Louis, del.	2.59c
San Fran., c.i.f.	2.75c

GALVANIZED No. 24

Pittsburgh, base	2.70c to 2.85c
Chi. dist. mills	2.80c to 2.95c
Chicago, del.	2.85c to 3.00c
Philadelphia, del.	3.01c
New York, del.	3.05c
Birm., base	2.85c to 3.00c
St. Louis, del.	3.19c
San Fran., c.i.f.	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, del.	2.64c

MILL RUN COLD-ROLLED No. 10

Pittsburgh, base	1.95c
Chicago, del.	2.10c
Philadelphia, del.	2.26c
New York, del.	2.30c

No. 20

Pittsburgh, base	2.40c
Chicago, del.	2.55c
Philadelphia, del.	2.71c
New York, del.	2.75c

AUTO. AND FURNITURE

Pittsburgh, No. 10	2.15c
Pittsburgh, No. 20	2.60c

ENAMELING SHEETS

Pitts., No. 10	2.40c
Pitts., No. 20	2.90c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.75c to 2.90c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

*Pittsburgh, base	1.60c
New York, del.	1.60c to 1.70c
Phila., del.	1.49½ to 1.59½
Boston, del.	1.72c to 1.82c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Birmingham, base	1.75c
Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	1.75c
St. Louis, del.	1.94c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75 and 1.85c
San Fran., c.i.f.	2.10c

RAIL STEEL

Pitts., Buff.	1.50c
Chicago, base	1.50c
Eastern mills	1.50c

IRON

Chicago, base	1.60c to 1.65c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

New billet steel, Chi., Pitts., Buff., Cleve., Birm. (cut lengths)	1.75c
Chicago, rail steel	1.50c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher with 10% discount off extras; joint carloads 10 cents higher with no discount from extras; pool carloads 20 cents up; less carloads 30 cents up.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.85
Cement coated nails	1.85
Galvanized nails	3.35

(Per pound)

Polished staples	2.55c
Galvanized fence staples	2.80c
Barbed wire, gal.	2.35c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$50.00

(To Manufacturing Trade)

Plain wire, 6-9 ga	2.10c
Spring wire	3.10c

Anderson, Ind., $1 over Pitts.-Cleve.; Chicago, Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
60,000 to 99,999	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅛ to 1½-inch	2.50c
1⅝ to 1⅞-inch	2.20c
2 to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massollon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Do., del. Phila.	1.86c to 1.96c
Do., del. N. Y.	1.90c to 2.00c
Cooperage hoop, Pittsburgh	1.65c
Do., Chicago	1.75c
Cold-rolled strip Pitts., Cleve.	2.00c
Worcester, 3 tons or over	2.10c to 2.20c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$20.00 to 22.00
50 to 75	$16.00 to 18.00
80 to 100	$20.00 to 21.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, R. R. mills	2.15c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand. job.	73 off list
Tie plates, Pitts.	$35.00

Rivets, Wrought Washers

Tie plates, Chi.	$35.00
*Struc., c.l., Pitts.-Cleve.	2.50c
*Struc., c.l., Chi.	2.60c
*7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 5 off
*Washers, c.l., Pitts. dist.	7.35 off
Do., Chi. dist.	7.25 to 7.00 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	73 off
Rolled thread, ½ x 6 and smaller	73 off
Eagle list	73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	73 off
Galv. tire bolts	60 and 10 off
Stove bolts, 72½-25-10 off in pkgs.; 85 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller, 73 off.	

NUTS

Semifinished	73 off

HEXAGON CAP SCREWS

Milled	85 off
Upset 1-in. diam., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	80 off
Upset, larger than 1-in.	80 off
Headless set screws	75-10 off

Cut Nails, Piling

Cut nails, c.l., Pitts.	$2.50
Do., less carloads, 5 kegs or over	$2.90
Steel piling, Pitts.	1.90c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

All discounts are net.

BUTT WELD
Steel

In.	Blk.	Gal.
¼ and ⅜	60½	42
½	65½	54
¾	69	59
1—3	71	62

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD
Steel

2	66	57
2½ to 6	69½	60½
7 and 8	68	58
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

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RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932, except Buffalo del. at Boston. Asterisk denotes price change.

LINE PIPE

Steel

⅛-inch, butt weld	54
¼—⅜, butt weld	59½
½, butt weld	64½
¾, butt weld	68
1—3, butt weld	70
2-inch, lap weld	65
2½—6, lap weld	68½
7—8, lap weld	67
9—10, lap weld	66
11—12, lap weld	65

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

BOILER TUBES

C. L. Discounts, f.o.b., Pitts.

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts, same as for hot rolled below. Charcoal Iron—Under 10,000 pounds; 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

Cold Drawn

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

Hot Rolled

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.....40%
15,000 ft. or 22,500 lbs.....70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm....$35.00-36.00
4-in., Birm. 38.00-39.00
4-in. Chicago 46.40-47.40
6 to 24-in. Chicago 43.40-44.40
6-in. & over, N. Y... 32.00-34.50
4-in. New York..... 34.50-36.50

Class A pipe $3 over Class B. Stand. fitgs., Birm. base..$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch. plus $10; 3-inch. plus $20; gas pipe fittings, $5 higher.

Pig Iron □ □

Per Gross Ton

FOUNDRY NO. 2

Chicago, furnace.....	$16.00
Pitts., dist. fur.	16.00
Pittsburgh, del.	16.63-17.13
Valley furnace	15.50
Cleve. fur., loc. del.	15.50
Philadelphia, del.....	16.26
Virginia furnace....	17.25
Granite City, Ill.....	16.00
St. Louis, del.	16.85
Buff., fur., local del.	16.00
Buff., all-rail, Bost.	19.05
*Buff., del. Brook...	18.50-19.00
*Buff., del. Newark	17.00-17.50
Ala., Birmingham..	12.00
Ala., del. Chicago....	16.25-16.78
Ala., del. St. Louis..	16.35
Ala., del. Cincinnati	16.51
Ala., Phila., dock del.	17.00-17.25
Ala., Balt.., dock del.	17.00
Ala., N. Y. dock....	17.50
Ala., Bost. dock del.	17.50-17.75
Tenn., Bir. base.....	13.00
Tenn., del. Cinci.....	16.51
Montreal, del.	23.00-23.50
Eastern, del. Phila.	16.76

FOUNDRY NO. 2X

Buff., fur., local del.	16.50
*Buff., del. Brook...	19.00-19.50
* Do, Newark	17.50-18.00
Buff., all-rail, Bost.	19.55
Virginia furnace..	17.75
Eastern, del. Phila.	16.76

FOUNDRY NO. 1X

Buff., fur., local del..	17.50
Eastern, del. Phila.	17.26
*Buff., del. Brook...	19.50-20.00
*Buff., del. Newark..	18.00-18.50

MALLEABLE

Valley furnace	15.50
Cleve. fur., loc. del.	15.50
Pittsburgh dis. fur.	16.00
Pittsburgh, del.	16.63-17.13
Chicago, furnace....	16.00
Buff., fur., loc. del.	16.50
Eastern Pa., del.....	17.13-18.91
Granite City, fur.....	16.50
Montreal, del.	24.00
Toronto, delivered..	22.60

BASIC

Pitts., dist. fur.	15.50
Pittsburgh, del.	16.13-16.63
Eastern Pa., del.....	16.00-16.25
Buff., fur., loc. del...	15.50-16.00
Montreal, del.	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00
Pittsburgh fur.	16.50
Pittsburgh, del.	17.13-17.63

LOW PHOS.

*Valley fur. stand....	24.00
Phila., standard	22.76-26.79
Copper bear., E. Pa. furnace	22.00-23.00

GRAY FORGE

Valley furnace	15.50
Pitts., dist. fur.	16.00
Pittsburgh, del	16.63-17.13

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

*Jackson County, O., or Pittsburgh furnace: 7%—$19.50; 8—$20; 9—$20.50; 10—$21; 11—$21.50; 12—$22; 13—$22.50; 14—$23; 15—$23.50; 16—24.

BESSEMER FERROSILICON

*Jackson County, O., or Pittsburgh furnace: 10%—$21.50; 11—$22; 12—$22.50; 13—$23; 14—$23.50; 15—$24; 16—$24.50.

Iron Ore □ □

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer....	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus....	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con. (nom.)	7.50
Copper-free low phos. 58-65%.....	nom.

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
No. Afr. low phos..	7.00
Swedish basic, 65%..	7.50- 8.00
Swedish low phos..	8.00
Spanish, No. Afr. basic, 50 to 60%..	7.00
Tungsten, spot, sh. ton unit, duty pd..	$10.75-11.00
N. F. fdy., 55%.....	7.00
Chrome ore, 48% gross ton c.i.f....	$16.50-17.50

Manganese Ore □

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%..	nominal
So. African, 52%....	18 to 19 cts.
So. Afr., 49-51%....	nominal
Indian, 48-50%	nominal

Refractories □ □

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Mo.....	$40.00
Alabama	43.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	35.00
Missouri	35.00
Georgia, Alabama..	35.00

MALLEABLE BUNG BRICK

All bases	45.00

SILICA BRICK

Pennsylvania	$40.00
Joliet, E. Chicago....	49.00
Birmingham, Ala.....	50.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$65.00
Unburned	55.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point....	$45.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar □ □

85 to 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$11.50
Washed gravel, import duty paid tide, gross ton.....	$17.50

Semifinished Steel □

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts....	1.50c-1.60c

Coke □ □

Price Per Net Ton

BEEHIVE OVENS

*Connellsville fur....	$2.00- 2.25
*Connellsville fdry..	2.75
Connell, prem. fdry.	4.00
New River fdry.....	6.00
Wise county fdry..	4.25- 5.00
Wise county fur.....	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del...	8.21- 8.81
*Chi. ov., outside del.	7.50
*Chicago, del.	8.25
New England, del...	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.....	7.75
Ashland, Ky.,ovens, Connell., basis	4.50
Portsmouth, ovens Connell. basis	4.50
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys □ □

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty pd.	*$68.00
del. Pitts.	73.24
Spiegeleisen, 19-20%, dom., fur., spot†..	24.00
Ferrosilicon, 50%, frieght all., c. l.....	74.50
Do, less carload..	82.50
Do, 75 per cent....	120-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrodhrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
Ferrotungsten, stand., lb., cont.....	0.94- 1.00
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton....	9.00
Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60%, lb	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity.

*Spot for June shipment $4 higher.

Bars

Selling Volume on Increase—Prices Quoted Provisionally—Speculative Buying Small

BAR PRICES, PAGE 49

Pittsburgh—The base price on bars beginning in July is still uncertain but orders in the meantime reflect a strong market. Most bar tonnage is moving into direct consumption and there is little buying of a speculative nature. Rush deliveries are requested on practically all orders and shipments appear to be fairly prompt. The leading steel mill reports demand for bars leading its finishing mill activity. Forging steel and other special automotive bar stock is moving in the heaviest tonnage of all bar mill products.

Cleveland—Current commercial steel bar prices are firm on the basis of 1.65c, Cleveland. All tonnage on present contracts must be specified by June 30 for delivery by July 15, but the number of specifications and recent new orders are so heavy that some mills will be shipping on them all through July. On new contracts for release in July some mills insist on clauses protecting them in the event of wage increases. These same interests expect a wage advance early in July, which they believe will raise bar prices at least $2 a ton. June business for sellers here was the best in two and a half years.

Chicago—Steel bar sales and specifications continue in the best volume so far this year, with moderate gains in orders from some consumers. Farm implement manufacturers are specifiying in slightly better volume and the outlook for this industry is the most favorable in two years. Railroads are taking more material for equipment repair work, while automotive requirements maintain the exceptional rate of the past several weeks. Producers continue to defer quoting third quarter prices and on current inquiries quote present prices subject to change pending a decision on wage rates. The market is steady at 1.70c, Chicago.

Boston—Commercial steel bar buying has been slightly heavier against an expected price advance. Industrial demand has supplied most of the moderate gains.

New York—Sellers of commercial steel bars are quoting 1.60c, Pittsburgh, for delivery to Aug. 1, with some stressing the importance to consumers of getting specifications in by the end of June.

Philadelphia—Commercial steel bar releases continue to increase, with protection on shipments up to Aug. 1 at the current price of 1.60c, Pittsburgh, or 1.91c, Philadelphia. Upon ascertaining more fully future costs under the new program of the government, producers are expected to announce a modest advance. Common iron bars are unchanged at 1.50c, Pittsburgh, or 1.81c, Philadelphia, pending a likely increase later.

Tin Plate Mills Busier; Price May Be Extended

Tin Plate Prices, Page 49

Pittsburgh—Tin plate operations in this district gained more than 5 points last week, and the average of all producers' plants is 95 to 100 per cent. A leading producer, by placing eight more mills in operation at its New Castle, Pa., works, is averaging 95 per cent. All of the independents in this district are running extra turns, and theoretically are over 100 per cent. Tin plate deliveries have been falling in arrears and on new business the best producers can promise is late September or early October. The present price of $4.25, per base box, is understood to be continuing through the third quarter at least on domestic business, and the export price is definitely assured for that period.

New York—Export demand for tin plate continues good, with inquiries from Japan and South America, Mexico and Cuba, and in increased volume from Canada, now that production in the dominion has ceased. Sellers' export prices are higher, but continued depreciation of the dollar is attracting widespread demand. Domestic releases also are heavy.

Plates

Wide Range of Buying Gives Better Tonnage—Navy Needs Are About 40,000 Tons

PLATE PRICES, PAGE 49

Pittsburgh—The market is still quiet on some of the wider and heavier gages of plates, due to a lack of railroad and bridge work. Lighter gages are in better demand for tanks, especially those for brewing companies. Chicago Bridge & Iron Works will fabricate 325 tons of plates at its Greenville, Pa., plant in 80 small 4-ton tanks for the Independent Brewing Co., Pittsburgh. Victor Brewing Co., Jeannette, Pa., has begun work on a plant addition involving storage and fermenting tanks. Treadwell Construction Co., Midland, Pa., requires 126 tons of plates for 18 tanks for the Ft. Pitt Brewing Co., Pittsburgh. Dravo Contracting Co., Neville Island, Pittsburgh, has closed on 135 tons for steel cylinders and caissons to be built at Cincinnati for the Chesapeake & Ohio railroad. The market on plates is slightly firmer with fewer 1.50c orders noted. More business is going at 1.60c. No third quarter price is announced. Buyers of plates are unable to get protection even into July.

Cleveland—Plate requirements are heavier. Two thousand tons are being negotiated for a chemical plant at Corpus Christi, Tex., for the Southern Alkali Corp., Barberton, O. Cleveland is taking bids on west-side watermains, which will require 1800 tons of plates ¼ to 7/16-inch thick. Fabrication contract for 13 storage tanks and a still for erection at Coraopolis, Pa., has been awarded by the Canfield Oil Co., Cleveland. Miscellaneous tonnage also has improved. The current market is firm at 1.60c, base, Pittsburgh, and where this price has been quoted for July makers have stipulated that it is subject to revision if wages are advanced.

Chicago—Plate specifications from miscellaneous users are moderately heavier, while larger consumers show little change in requirements. Railroads are taking larger lots for car and locomotive repairs, while activities of the oil industry are retarded by uncertainty as to the national conservation program. Plates are steady at 1.70c, Chicago, but producers are refusing long-term commitments at this figure.

New York—Platemakers report a contemplated program for construction of oil tankers requiring over 40,000 tons of plates, shapes and bars. Opening of bids by the New York Central for third quarter requirements revealed that most producers quoted only for the month of July. Some who usually figure did not quote at all. Consumers of plates

are generally specifying freely with a substantial aggregate tonnage for oil tanks.

Boston—Miscellaneous demand for plates hold well. An oil burner builder in Western Massachusetts has increased production on a new model and is taking heavier plate shipments. Minimum for most business is 1.50c, Coatesville, Pa., but mills refuse to contract for next quarter at that price without protection against possible increased costs.

Philadelphia—Plate prices are firmer at 1.40c to 1.50c, Coatesville, Pa., with no action yet regarding general tonnage for shipment beyond July 31. The 17 naval craft up for bids July 26, for construction to be in private yards will take approximately 40,000 tons of steel, mostly plates. The two airplane carriers will require about 9000 tons each and the heavy cruiser and light cruiser, respectively, about 6000 and 5000 tons. Of the four destroyers up for bids July 6, two, it now appears, will be built in navy yards.

Contracts Placed

7000 tons, caissons, west bay substructure, San Francisco-Oakland bridge, San Francisco, to Moore Drydock Co., Oakland, Calif.

6000 tons, for two freighters for H. H. Bull & Co., New York, placed by Newport News Shipbuilding & Dry Dock Co., Newport News, Va., principally with Pittsburgh mills.

4300 tons, Bouquet canyon penstock, Los Angeles, to Western Pipe & Steel Co., Los Angeles.

610 tons, two 82,000-barrel tanks, Shell Petroleum Corp., Lake Charles, La., to Chicago Bridge & Iron Works, Chicago.

580 tons, tanks, Richfield Oil Corp. of New York, New York, for erection in Rhode Island and New York, to Graver Tank & Mfg. Co., East Chicago, Ind.

500 tons, caissons, east bay substructure, San Francisco-Oakland bridge, San Francisco, to Moore Drydock Co., Oakland, Calif.

220 tons, 250,000-gallon elevated tank, Orrville, O., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

135 tons, steel cylinders, Chesapeake & Ohio railroad bridge No. 11, Cincinnati, to Dravo Contracting Co., Neville Island, Pittsburgh.

100 tons or more, two 50,000-gallon and one 100,000-gallon tanks, combined sewage plant, Sulligent and Guin, Ala., and water system, Red Bay, Ala., to Chicago Bridge & Iron Works, Chicago.

100 tons, two tanks and towers, Helena, Mont., to Great Falls Iron Works, Helena, Mont.

100 tons, standpipe, Walnut Park, Calif., to Chicago Bridge & Iron Works, Chicago.

Unstated tonnage, 13 storage tanks and still for Canfield Oil Co., Cleveland; for erection at Corapolis, Pa.; to Adamson Mfg. Co., East Palestine, O.

Contracts Pending

27,000 tons, approximately, 17 navy ships, Washington, bids of private yards July 26; additional steel requirements about 13,000 tons.

2000 tons, chemical plant for Southern Alkali Corp., Barberton, O., at Corpus Christi, Tex.

1800 tons, approximate, water mains, Cleveland; including 11,000 feet of 36-inch and 12,000 feet of 48-inch pipe, with wall thickness ¼ to $\frac{7}{16}$-inch; bids being taken.

290 tons, intake towers, Boulder dam, Boulder City, Nev.; pending.

100 tons, brewery tanks, New Bedford, Mass.

Unstated tonnage, storage tanks, department of agriculture, Olustee, Fla.; L. O. Koven & Bro., Jersey City, N. J., low, at 4370, bids June 6.

Railroads

Third Quarter Inquiries Met With Quotations for July

Track Material Prices, Page 49

On several inquiries from railroads for coverage for general steel requirements for third quarter, prices were quoted only for July. A number of roads are figuring their rail requirements but have not put them before the mills. Releases of track fastenings and material for repairs have been fairly active. An extensive repair program is said to be imperative soon if rail traffic continues to grow.

Chicago, Burlington & Quincy has ordered a three-car articulated unit with a speed of 120 miles an hour, largely of stainless steel. The Alaska railroad has placed 170 tons of tie plates with the Pacific Coast Steel Corp., Seattle. An advance on track spikes, now quoted at 2.15c, mill, is expected shortly.

Car Orders Placed

Chicago, Burlington & Quincy, one three-car diesel-driven passenger train unit, to Budd Mfg. Co., Philadelphia.

Locomotives Placed

Navy, two switching locomotives and spares for Lualualei and West Loch, T. H., to Atlas Car & Mfg. Co., Cleveland.

Rail Orders Placed

Seattle municipal street railway, 500 gross tons, 60, 82 and 140-pound, to Pacific Coast Steel Corp., Seattle.

Car Orders Pending

United States engineer, second district, New Orleans, four electrically propelled 20-ton asphalt cars; to ask bids soon.

Strip

Some Selling for July on Conditional Basis

Strip Prices, Page 49

Pittsburgh — Where several strip producers have definitely withdrawn from the third quarter market and refuse to quote, other strip sellers are cautiously making a few contracts, but only on the condition of revision in the event of higher manufacturing costs. A few weeks ago, strip producers were all willing to book tonnage for third quarter at 1.60c, Pittsburgh, on hot and 2.00c, Pittsburgh or Cleveland, on cold strip. There still is considerable pressure for full third quarter and even full last half coverage. Neither is being granted. The present market on strip steel is 1.55c, Pittsburgh, for hot-rolled. Cold-rolled is quoted 1.80c to 2.00c.

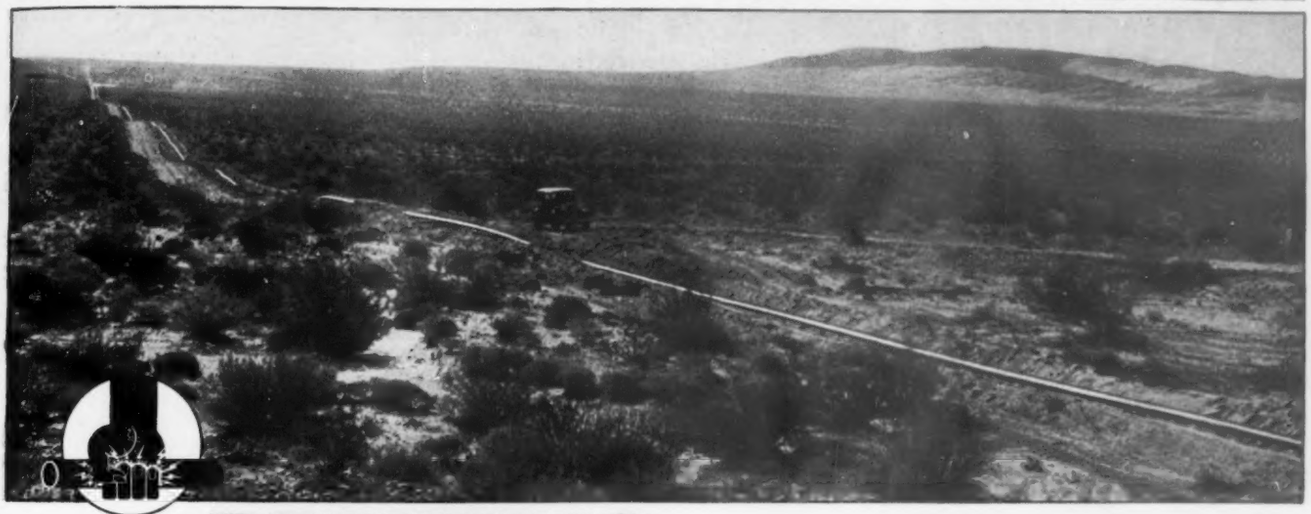
Cleveland—Some mills have announced 2.00c, base, Cleveland, on cold-rolled strip for third quarter. The current range is 1.80c to 2.00c, the latter applying to smaller lots. Hot-rolled is 1.55c, base, Pittsburgh. In the absence of a definite price policy for the third quarter, one or two mill interests are offering to protect their regular consumers at these current prices on hot and cold-rolled, through July.

Chicago — Strip producers are quoting 1.70c, Chicago, for hot strip on third quarter contracts, subject to revisions made necessary by changes in wage costs. The market recently has been 1.65c for June, with the minimum on cold-rolled strip 1.80c, Pittsburgh-Cleveland. Specifications and shipments continue active and maintain the volume of preceding weeks.

Boston—Strip mill operations are holding up well with releases heavy and some consumers seeking to cover for third quarter. Some advance cold-rolled strip business has been taken at 2.20c, Worcester, but mills are protecting against higher costs and buying for next quarter has not been heavy.

Philadelphia — New tonnage of cold-rolled strip is moving more generally at 2.00c, Pittsburgh, or 2.31c, Philadelphia, and of hot-rolled at 1.60c, Pittsburgh, or 1.91c, Philadelphia. Considerable of the tonnage now moving is against second quarter contracts at $3 and $4 a ton less.

ANOTHER TRIBUTE



REPUBLIC
ELECTRIC WELD
LINE PIPE

One of the largest pipe orders placed on the Pacific Coast in 1932 was given on December 28th by the Board of Directors of the Metropolitan Water District, representing 13 cities of Southern California, and calling for 180 miles of Republic Electric Weld Pipe in 5 and 8-inch sizes. Just another tribute to this better pipe.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

Structural Shapes

Awards Hold Up, With 4600 Tons Placed for Pennsylvania's Pier at Baltimore, and 2300 Tons for Chemical Plant — Mills Protecting Fabricators for July

STRUCTURAL SHAPE PRICES, PAGE 49

Philadelphia — With shape mills still in the dark as to future costs, the majority are extending protections only on shipments to Aug. 1. An advance, although probably a moderate one, is expected to be announced for shipments beyond Aug. 1 as soon as conditions under the industrial law become more clarified. The current market is 1.60c, nearest mill, or 1.65c, Philadelphia. A leading award involves 4600 tons for the Pennsylvania railroad pier in Baltimore.

Pittsburgh—Third quarter prices on plain structural material and wide flange shapes still are deferred. Fabricators are experiencing considerable difficulty in quoting on jobs for closing in late June or early July. Ft. Pitt Bridge Works, Pittsburgh, has booked 250 tons of structural steel for a warehouse at Huntington, W. Va., for the Owens-Illinois Glass Co. About 1550 tons of shapes are involved in five brewery projects which have just come out for figures. Carnegie Steel Co. has been awarded 800 tons of steel piling for Sand Products Co., Muskegon, Mich.

Cleveland—Southern Alkali Corp., Barberton, O., has placed 2300 tons of shapes with the Houston Structural Steel Co., Houston, Tex., for a chemical plant at Corpus Christi, Tex. Bids are being taken to July 13 on a garbage incinerator for Cleveland which will require approximately 500 tons of shapes and 250 tons of concrete bars. For a brewery at Columbus, O., 160 tons have been awarded. Plain material is firm at 1.60c, base, Pittsburgh, makers covering specific jobs for July bidding only.

Boston—Structural buying is in small lots. Several New England projects are included in federal work, bids opening in July. Plain material is steady at 1.60c, Pittsburgh. Few fabricators have covered on future needs.

Chicago—Pending structural work is small following closing on several moderate size projects the past several weeks. Appearance of several inquiries for postoffice construction, the first to be received since such work was suspended several months ago, gives some hope that the work to be fostered by federal funds will become more active. Only small jobs currently are active. Bridges for the Missouri Pacific railroad, requiring 1525 tons, and a plant for the American Sheet & Tin Plate Co. here, taking 975 tons, are outstanding among awards.

New York—Award of 2200 tons for a brewery building leads structural buying. Several large public construction projects, which have been held up, are going ahead. Fabricators are buying plain material mainly for immediate shipment, and there has been practically no contracting for next quarter. Mills are generally taking business through July at 1.60c, Pittsburgh, with a protecting clause against higher costs.

Contracts Placed

12,000 tons, Rip Van Winkle bridge, Hudson river, Greene-Columbia counties at Catskill, N. Y., to Harris Structural Steel Co., New York; Frederick Snare Corp., New York, general contractor. Reported last week as going to unstated fabricator.

4600 tons, Pennsylvania railroad piers, Baltimore, to McClintic-Marshall Corp., Bethlehem, Pa.; through Sinclair & Griggs, Philadelphia, general contractors.

2330 tons, caissons for west bay substructure, San Francisco - Oakland bridge, San Francisco, to Moore Drydock Co., Oakland, Calif.

2300 tons, chemical plant at Corpus Christi, Tex., for Southern Alkali Corp., Barberton, O., to Houston, Structural Steel Co., Houston, Tex.

1760 tons, 178 beam spans, Missouri Pacific railroad, St. Louis, to American Bridge Co., Pittsburgh.

1200 tons, University hospital, Baltimore, to Dietrich Bros., Baltimore; Consolidated Engineering Co., Baltimore, general contractor.

975 tons, plant building, American Sheet & Tin Plate Co., Gary, Ind., to American Bridge Co., Pittsburgh.

800 tons, steel sheet piling for Sand Products Co., Muskegon, Mich., to Carnegie Steel Co., Pittsburgh.

500 tons, Twelfth street street car viaduct, to World's fair, Chicago, to American Bridge Co., Pittsburgh.

280 tons, boiler house, city hospital, Baltimore, to Dietrich Bros., Baltimore; M. A. Long, Baltimore, general contractor.

250 tons, warehouse addition for Owens-Illinois Glass Co., at Huntington, W. Va., to Ft. Pitt Bridge Works, Pittsburgh; Rust Engineering Co., Pittsburgh, general contractor.

250 tons, school, Greenville, Me., to McClintic-Marshall Corp., Bethlehem, Pa.

250 tons, Eslinger brewery, Philadelphia, to Belmont Iron Works, Philadelphia.

250 tons, viaduct for Southern Pacific Co. at Madrona, Calif., to McClintic-Marshall Corp., San Francisco.

200 tons, brew house National Brewing Co., Baltimore, to Dietrich Bros., Baltimore.

180 tons, addition to Ohrback store, East Fourteenth street, New York, to National Bridge Works, Long Island City, N. Y.

178 tons, bridge over Kankakee river, Lake and Newton counties, Indiana, to American Bridge Co., Pittsburgh; through Haines & Haines, Dowagiac, Mich. Project includes 83 tons of bars, to Joslyn Mfg. & Supply Co., Fort Wayne, Ind.

170 tons, caissons for east bay substructure, San Francisco-Oakland bridge, San Francisco to Moore Drydock Co., Oakland, Calif.

160 tons, addition, Wagner brewery, Columbus, O., to Truscon Steel Co., Youngstown, O.

150 tons, high school, Poughkeepsie, N. Y., to Belmont Iron Works, Philadelphia.

150 tons, Wayne county highway bridge, Michigan, to Lackawanna Steel Construction Co., Buffalo.

130 tons, beam framing, sewage plant, Lancaster, Pa., to A. B. Rote Co., Lancaster.

110 tons, St. Elizabeth convent building, Cornwell Heights, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, rebuilding bridge, Neponset river, Milton Lower Mills, Mass., to Boston Bridge Works, Cambridge, Mass.; C. J. Maney Co., Boston, general contractor. Concrete Steel Co., Boston, awarded 10 tons reinforcing bars.

100 tons, county bridge, Santiam river, Linn county, Oregon, to unnamed interests.

Shape Awards Compared

	Tons
Week ended June 24	**17,373**
Week ended June 17	**17,230**
Week ended June 10	**5,809**
This week in 1932	**10,262**
Weekly average, 1932	**14,285**
Weekly average, 1933	**14,984**
Weekly average, May	**39,377**
Total to date, 1932	**402,372**
Total to date, 1933	**389,580**

Contracts Pending

20,000 tons, estimated, downtown postoffice, Manhattan, New York; plans being completed.

5000 tons, county courthouse and jail, Kansas City, Mo.; George A. Fuller Co., Chicago, low, $1,975,000.

4000 tons, federal building, San Francisco; N. P. Severin Co., Chicago, low bidders on general contract, has withdrawn its bids.

2500 tons, Lebanon hospital, New York.

1000 tons or more, for passenger station, utility buildings, Houston, Tex.; bids

July 10, Southern Pacific Lines.
735 tons, psychopathic ward, general hospital, San Francisco; bids postponed from June 14 to Aug. 16.
700 tons, brewery bottling plant, Newark, N. J.
700 tons, bottling plant, Brooklyn, N. Y., for Interborough Beverage Co., Brooklyn, N. Y.
600 tons, Key System Ltd., ferry pier, Oakland, Calif.; bids June 22.
500 tons, garbage disposal plant for Cleveland. Project includes 250 tons of concrete bars.
458 tons, Soto street bridge, Los Angeles; bids soon.
445 tons, angles, shapes, channels and tees, bureau of supplies and accounts, navy, department, Washington; bids July 5, schedule 268, construction and repairs.
425 tons, Elizabeth river bridge, Norfolk, Va.
290 tons, building, American Commercial Alcohol Co., Philadelphia.
275 tons, bottling plant for National Brewing Co., Baltimore.
100 tons, school building, Bethel, Me.
Unstated tonnage, federal postoffice and additions, bids with supervising architect, Washington, on following dates: Wilmington, N. C., July 13; Asbury Park, N. J., July 14; North Hollywood, Calif., July 28; Winter Haven, Fla., July 19; Anniston, Ala., July 18; Sabine Pass, Tex., Quarantine station, July 18.

Concrete Bars

Market for Small Lots Is More Active — Milwaukee Taking Bids on 3000 Tons— 1200 Tons Awarded at Cleveland — Pennsylvania Railroad To Buy 1600 Tons

REINFORCING BAR PRICES, PAGE 49

Chicago—Inquiry for small lots of reinforcing bars is slightly more active, while awards are confined to small tonnages. For Kentucky roadwork 200 tons have been placed. Three thousand tons are pending for a Milwaukee sewage disposal plant. In some instances producers are refusing to bid on large tonnages, shipments of which would be extended over a long period, in view of uncertainty over wage rates and prices. Quotations made on new work are for prompt shipment, with long-term coverage avoided.

Pittsburgh—The market is firm at 1.75c, Pittsburgh, for cut lengths, for the remainder of June. Third quarter prices have not been announced on new billet steel reinforcing bars. A large number of small construction jobs are active.

Cleveland—This city has placed 1200 tons of concrete bars for a reservoir at Parma, O., material to be supplied by the Cleveland mill. About 250 tons will be required for a Cleveland garbage incinerator, in addition to 500 tons of shapes, on which bids are being taken July 13. The general market is quiet, with prices firm.

Boston — Concrete reinforcing steel buying is light. Inquiry is slightly better, but mainly for small lots. A New Hampshire bridge requires a fair tonnage and small public work requirements are beginning to develop in New England. Prices are not subject to much test at 1.60c, Buffalo and Pittsburgh, for mill lengths, or 1.75c, cut lengths.

New York — On small lots, concrete reinforcing steel bars are steady, but larger tonnages bring out concessions. Inquiry is heavier, with close to 4000 tons of bars and mesh active for bridges and highways on Long Island.

Philadelphia—Specifications have just been issued on 1600 tons of reinforcing bars for the Pennsylvania railroad pier in Baltimore, with indications that this tonnage will be let by the railroad direct instead of through the general contractors. Recent buying includes a few jobs of around 100 tons each. The market is nominally 1.86c, Philadelphia, on billet steel in cut lengths.

Contracts Placed

1200 tons, reservoir for Cleveland at Parma, O., to Patterson-Leitch Co., Cleveland.
600 tons, University hospital, Baltimore, to Jones & Laughlin Steel Corp., Pittsburgh, through Dietrich Bros., Baltimore; reported in STEEL June 19, to unstated mill.
315 tons, three state road jobs in Dauphin and Berks counties, Pennsylvania, to Kalman Steel Corp., Bethlehem, Pa.
200 tons, Kentucky roadwork, to unstated interest.
172 tons, planetarium Griffith Park, Los Angeles, to unnamed interest.
145 tons, highway pavement and structures, F. A. P.-E.-276-AB, Decatur and Rust counties, Indiana, to Truscon Steel Co., Youngstown, O.; W. L. Johnson Construction Co., Hicksville, O., general contractor.
135 tons, terminal, out-harbor, Oakland, Calif., to Soule Steel Co., San Francisco.
100 tons, sewer, Elizabeth, N. J., to Igoe Bros., Newark, N. J.
100 tons, penstock, Bouquet canyon dam, Los Angeles, to unnamed interest.
100 tons, vault, federal reserve bank, Philadelphia, to Gilmour Steel Products Co., Philadelphia.

Concrete Awards Compared

	Tons
Week ended June 24	3,067
Week ended June 17	3,215
Week ended June 10	2,602
This week, 1932	5,601
Weekly average, 1932	3,920
Weekly average, 1933	2,977
Weekly average, May	4,178
Total to date, 1932	114,454
Total to date, 1933	77,405

Contracts Pending

3000 tons, sewage disposal plant, Milwaukee; bids being asked.
1600 tons, piers, Pennsylvania railroad, Baltimore; specifications issued.
700 tons, federal building, San Francisco; N. P. Severin Co., Chicago, low bidder, has withdrawn bid.
365 tons, mainly mesh, paving and grade elimination, Jones Beach Parkway, Nassau county, New York; Johnson, Drake & Piper Inc., Freeport, L. I., N. Y., low, $282,630, bids June 20.
125 tons, private hospital, Sayre, Pa.; bids asked.

Coke

Higher Prices Follow Wage Increase; Demand Is Larger

Coke Prices, Page 50

Following wage advances, both furnace and beehive grades of foundry coke have been increased in price. Last week it is understood all prices below $2 on furnace coke were withdrawn and selling prices on common grades of beehive foundry moved up to around $2.75, Connellsville ovens. There is no change in premium brands which are in quiet demand at $4.

Spot foundry coke at Chicago has been advanced 50 cents a ton to $7.50, ovens, for outside delivery and $8.25, delivered Chicago. Sellers defer making contracts for second half, awaiting the settlement of wages. Consumers' needs at the expiration of this month will be filled by spot purchases pending establishment of new prices.

At other centers steady improvement in demand and shipments is noted, with desire of consumers to cover ahead further than producers will allow. Prices are strong and tend upward.

Pipe

Market More Active—Large Tonnage Placed for Chemical Plant—Concessions Still Noted

PIPE PRICES, PAGE 49

Cleveland—For a chemical plant at Corpus Christi, Tex., to be built for the Southern Alkali Corp., Barberton, O., more than 15,000 tons of cast pipe, and 900 tons of steel pipe have been awarded. The company is a subsidiary of the Columbia Chemical Co. division of the Pittsburgh Plate Glass Co. For the same project 2300 tons of shapes have been awarded, and 2000 tons of plates are being negotiated. Pipe requirements in Cleveland are restricted by lack of building operations, but jobbers' orders have improved.

Pittsburgh—Butt weld pipe is in much better demand, but seamless orders generally are small and do not appear promising. No large line pipe tonnages are active.

Chicago—Cast iron pipe demand and inquiries have yet to feel the stimulus of the financial aid made available through the recent passage of the industrial control bill. A number of projects are expected to materialize in the near future, however, including some proposed work which previously had been deferred. Most orders recently have involved only small lots. Chicago is taking bids on 2000 feet of 6-inch spiral steel pipe.

Boston—Cast pipe buying and inquiry is heavier. Brockton, Mass., bought close to 1000 tons from two foundries, and Warwick, R. I. has bids on 825 tons. Other active inquiry approximates 3000 tons. Prices have not been firmly held on recent large-lot buying.

New York—Cast pipe buying is moderate. New York city will take bids early in July on additional requirements. A state job at Wingdale, 400 tons, has been placed. Prices are reported firmer, but actual competitive bidding has brought out concessions. Cast pipe plant operations in the East average around 40 per cent.

Birmingham, Ala.—Demand for cast iron pipe continues slow. Active business is expected to result shortly from federal financing of various projects. Shop operations average two to three days a week.

Cast Pipe Placed

15,000 tons Southern Alkali Corp., Barberton, O., for plant at Corpus Christi, Tex.; reported placed with United States Pipe & Foundry Co., Addyston, O.

1300 tons, 15,600 feet, 20-inch, class D, Alki avenue improvement, Seattle, to United States Pipe & Foundry Co., Burlington, N. J.

925 tons, 24-inch, Brockton, Mass., 660 tons to R. D. Wood & Co., Florence, N. J.; remainder to Donaldson Iron Works, Emaus, Pa.

400 tons, small sizes, state project, state hospital, Wingdale, N. Y., to Donaldson Iron Works, Emaus, Pa.

150 tons, 10-inch class 250, South Pasadena, Calif., to R. D. Wood & Co., Emaus, Pa.

Steel Pipe Placed

900 tons, various sizes up to 20-inch, Southern Alkali Corp., Barberton, O., for plant at Corpus Christi, Tex., to Youngstown Sheet & Tube Co., Youngstown, O.

Unstated tonnage, 1200 feet, 20-inch i.d. shore pipe, United States engineer, Savannah, Ga., to Gaynon Iron Works, Jacksonville, Fla.; bids June 16.

Unstated tonnage, steel tubes, bureau of supplies and accounts, navy department, Washington, for eastern yards, to Michigan Seamless Tube Co., South Lyon, Mich., $10,000.25, delivered. Also 752 for Puget Sound, Wash., at $2.9703 each, delivered; bids May 31.

Cast Pipe Pending

7800 tons, 6 to 12-inch, class 250, Los Angeles; bids June 26.

1595 tons, 6 and 8-inch, class 150, San Francisco; bids June 23.

825 tons, 6 to 16-inch, Warwick, R. I.; bids in.

650 tons, 8-inch, Versailles, Ky.; bids July 5.

500 tons, department of purchase, New York; bids early in July.

450 tons, 6 and 8-inch, Sturbridge, Mass.; bids June 27.

Steel Pipe Pending

2000 feet, 6-inch spiral pipe and 100 victaulic couplings for Chicago avenue lake and land tunnel, Chicago, bids June 30.

Wrought Pipe Placed

100 tons, or more, black wrought iron pipe, 12-inch and under, for Panama, to H. Belfield Co., Philadelphia, at $6429.42. Some cast pipe awarded to Warren Foundry & Pipe Co., Phillipsburg, N. J., at $1627.08 Bids June 6, schedule 2870. Material for Madden dam.

Wire Rods Unchanged for July; New Classifications

Semifinished Prices, Page 50

Third quarter prices for sheet bars, billets and slabs have not been announced. The current market is firm at $26, Pittsburgh, Youngstown, O., or Cleveland. Tin plate manufacturers are taking larger tonnages of sheet bars. One producer in the Pittsburgh district reports much heavier demand for forging billets, the price remaining $31, Pittsburgh base. Wire rods may be obtained through July for shipment not later than Aug. 15 at $35, Pittsburgh. A change in the semifinished market is in prospect with a new clasification of size and quantity extras being considered.

Wire

Quotations Limited to July, Contingent on Wage Rate

Wire Prices, Page 49

Pittsburgh — Specifications for wire products in July will be accepted at the present schedule of prices, according to the decision of a wire producer recently. However, all material bought in July must be specified by Aug. 15 or earlier if shipment is designated to be at mill's convenience. In the spot market, nails are quoted $1.85, plain wire 2.10c, and spring wire 3.10c, although shipments against lower priced contracts are current.

Cleveland—Current prices are firm at 2.10c, base, Pittsburgh, for plain wire, and $1.85 for nails. Future price policies still are unsettled. Some makers are offering to contract at the current levels for July, subject to delivery before Aug. 15. Others are not quoting for July, or insisting on clauses giving them he right to revise if wages are advanced. Specifications on contracts and new orders are heavy, especially from nut and bolt manufacturers.

Boston—Wire mill operations continue active, expanding in some instances to the best rate since 1929. Producers are generally taking business through July for shipment by Aug. 15 at present prices. Plain wire is firm at 2.20c, Worcester.

New York—Present quotations on wire products apply to specifications up to Aug. 1, with deliveries to Aug. 15. Specifications are good from manufacturing consumers.

Chicago—Wire producers are accepting orders for July shipment at present prices but refuse third quarter contracts, pending decision on wages. The market has firmed considerably over recent months with $1.90 for carload lots of wire nails and 2.15c for plain wire generally well observed. Sales and specifications show no tendency to decline.

Personals

(*Concluded from Page* 19)

ed as vice president and general sales manager of the division by W. H. Whittekin. Frank L. Wiegand has been transferred from the treasury department to be division manager of stores. Headquarters of all three are in Dallas.

□ □ □

Willard F. Rockwell, president of the Wisconsin Axle Co., has also been elected president of the Timken-Detroit Axle Co., of which the Wisconsin company is a subsidiary.

□ □ □

Paul Seeger, former banker of Kenosha, Wis., has been appointed general sales manager of the Elra Mfg. Co., Kenosha, manufacturing a new type of electric heating unit.

□ □ □

Wade Stevenson, president, Eastman Machine Co., and Henry W. Wendt Jr., chairman of the Buffalo Forge Co., were elected directors of the Buffalo chamber of commerce recently.

□ □ □

E. C. Bayerlein, vice-president and treasurer, Nordberg Mfg. Co., Milwaukee, has returned from an extended trip abroad for investigation of business opportunities in England, Scotland, Holland and Germany.

□ □ □

Norman W. Storer, consulting engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been awarded the Benjamin Garver Lamme medal, given annually by Ohio State university to one of its graduates who has made an outstanding contribution to the electrical industry. The award was made to Mr. Storer for work in electrical street railway apparatus.

□ □ □

L. W. Sheehy has been appointed manufacturer's representative by Ex-Cell-O Aircraft & Tool Corp. in the New England territory, with headquarters at 51 Washington avenue, Cranston, R. I. Mr. Sheehy will be handling the products of Continental Tool Works Division and Krueger-Wayne Tool Co. division in addition to those of Ex-Cell-O.

□ □ □

In announcing in its May 1 issue, page 51, that F. E. Wolf, formerly manager of the Pittsburgh office, and Harold Holden, formerly manager of the Boston office of the Pangborn Corp., Hagerstown, Md., were no longer connected with that company, STEEL also stated that the two sales offices have been closed. The Pangborn Corp. states that it has not closed either its Boston or Pittsburgh offices, and STEEL makes this correction.

PROGRESS? YES!

When we told you why Mansfield Electrical Sheets are INHERENTLY GOOD, and they are, we did not mean that we feel satisfied with them. When they are perfect, we won't need to do much but rest, but now we are hustling constantly to make PROGRESS.

PROGRESS means to us doing a better job, giving you better sheets, better looking and better behaving, so that your job may be easier and that your motors and transformers may be better.

"Satisfaction is the worst enemy of progress and is one of the world's worst diseases."

C. F. Kettering

MANSFIELD ELECTRICAL SHEETS

EMPIRE STEEL CORPORATION

Mansfield, Ohio

Sales Offices:

New York, Dayton, Cleveland, Indianapolis, Chicago, Detroit, St. Louis, San Francisco

Pig Iron

More Stacks Being Blown In Daily—Pending Price Rise To Start New Buying Wave?

PIG IRON PRICES, PAGE 50

Pittsburgh—Orders and inquiries improved last week in the merchant iron market. Shipments continue strong. Outstanding among orders was one for a round tonnage of iron which Edgewater Steel Co., Oakmont, Pa., placed with an eastern Pennsylvania steelmaker. The full market price is reported to have governed the transaction. Low phosphorous iron has been in heavier demand and among recent buyers have been Otis Steel Co., Cleveland, and Mesta Machine Co., Homestead, Pa. Mackintosh-Hemphill Co., Pittsburgh, closed on an order last week for castings, general machinery work for the Southern Alkali Corp., Corpus Christi, Tex., which requires about 100 tons of low phosphorus iron. The market on this material is now $24, valley furnace. Glassport, Pa., buyer purchased some basic iron last week, dividing the order between a seller in the Pittsburgh district and an Ohio supplier. The prices being generally done call for a schedule of $16 on foundry and malleable, $16.50 on bessemer and $15.50 on basic, all Pittsburgh district furnace base. Several small sales of bessemer late last week tested the $16.50 price. Bethlehem Steel Co. has blown in another furnace at its Cambria works, Johnstown, Pa., making three out of seven furnaces in operation there.

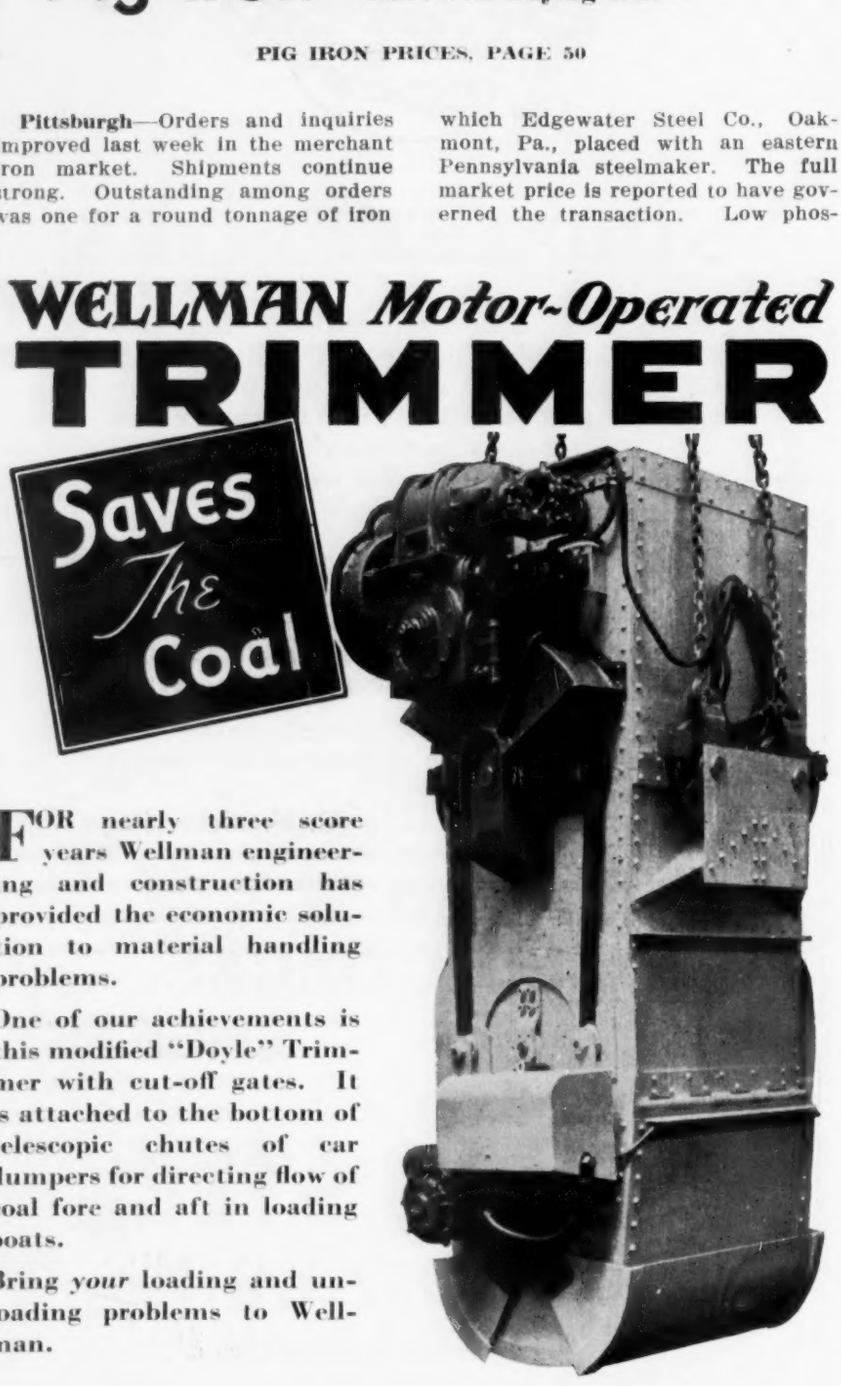
Cleveland—Producers are adopting a close-range selling policy until the effect of the Wagner law on prices becomes more clearly defined. Cleveland furnaces now quote $15.50, base, furnace, for local and outside shipment. An advance is expected shortly. Large melters covered third quarter requirements, and recently inquiries for fourth quarter appeared. Stocks have been reduced substantially and one or two additional furnaces may be lighted soon. Some furnace interests last week decided not to quote on any more tonnage at the current price for delivery beyond July 1. Demand is strong. Furnace companies with headquarters here booked 10,000 tons in the past week, including several lots of 1500 to 2000 tons.

Chicago — Shipments continue heavier than a month ago with no decrease evident in the movement. Automotive requirements are steady. Jobbing foundries gradually are increasing operations, with schedules currently the best so far this year. Future prices are rather indefinite in view of pending wage developments, and producers are disinclined to sell far ahead. The $16, furnace, price on No. 2 foundry and malleable is held firmly on new business.

Boston—New buying is light, under 1000 tons for the week in New England territory, but shipments against contracts are active. Prices are firm and unchanged. Several machinery firms, notably textile, have booked good business which may presage early buying.

New York—Specifications are moderately good, and prices are strong. Buffalo prices for delivery at Brooklyn, N. Y., and Newark, N. J., are up

WELLMAN *Motor-Operated*
TRIMMER



FOR nearly three score years Wellman engineering and construction has provided the economic solution to material handling problems.

One of our achievements is this modified "Doyle" Trimmer with cut-off gates. It is attached to the bottom of telescopic chutes of car dumpers for directing flow of coal fore and aft in loading boats.

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Steel Mill Equipment . . Coal and Ore Handling Equipment . . Car Dumpers, all types Williams Buckets and Trailers . . Gas Producers, Flues, etc. . . Gas Reversing Valves Blast Furnace Skip Hoists . . Safety Stops for Traveling Structures . . Special Cranes Port and Terminal Equipment . . Castings and Machine Work to customers' drawings

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ENGINEERS CONSTRUCTORS MANUFACTURERS
CLEVELAND, OHIO
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25 cents a ton. Importers of foreign iron are feeling the pinch of delivering on old contracts made prior to this country's going off the gold standard, some compensations on unfilled business having been reported recently as made in lieu of further shipments.

Philadelphia—Placing of 9000 to 10,000 tons of domestic basic by an eastern consumer leads buying in this district. The price paid has not been annunced, although the usual asking figure on this grade is $15.25, furnace. Foundry specifications continue to expand, more than reflecting the 15 per cent increase in foundry operations over the past month. No. 2 plain is firm at $15.50, eastern Pennsylvania furnace, with producers yet to open their books for fourth quarter.

Buffalo—Applying only on third quarter business, quotations are $15 minimum on iron for eastern shipment and $16 for local district. Opening of fourth quarter books is not in prospect. General Electric Co. is inquiring for 1500 tons for its Elmira, N. Y., plant. Bethlehem Steel Co. is lighting another furnace at Lackawanna to go into immediate production for an indefinite period, making two in operation at this works. A Hanna Furnace Corp. stack will be making iron by mid-July. Steel Co. of Canada will light a furnace at its Hamilton plant in a few days. Republic Steel Corp. is using its full furnace capacity here. Several barges are being dispatched weekly on the canal for seaboard delivery.

Cincinnati—Shipments of northern foundry iron continue steadily heavier, probably to show a 25 per cent increase this month over May. New ordering is fair. Pending price increases may bring out heavier buying soon. Quotations are firm, with northern iron at $17.01, base, delivered Cincinnati, and southern iron 50 cents less.

Birmingham, Ala—Sales are improved somewhat, light tonnage predominating. Present plans call for blowing in additional furnace capacity within the next two weeks. Base price is firm, $12, f.o.b. furnaces, No. 2 foundry.

Toronto, Ont.—Demand for merchant iron has improved and total sales for the week rose to a new high for the year. It is stated that three furnaces will blow in within the next 10 days.

St. Louis — Market continues strong, with further price advances from both northern and southern furnace interests expected in the next few days. Shipments have decreased due to temporary suspension of forwardings by the leading local producer which was recently placed in receivership. Jobbing plants have booked fair business and have backlogs sufficient to maintain present operations over the next six weeks. Fourth quarter inquiries have shown a substantial increase.

Pittsburgh Screw & Bolt Co., Pittsburgh, reports net loss of $203,925 for the March quarter, against loss of $250,140 in the first quarter of 1932.

Ferromanganese Advance Expected This Week

Ferroalloy Prices, Page 50

An advance in ferromanganese prices is expected this week, with present contracts expiring June 30. The new prices probably will apply to third quarter only. Shipments continue to improve. One large alloy steel bar producer in Pittsburgh has been increasing releases.

EXTRA WIDE FLATS
AND SPECIAL SHAPES

"In many instances fabricators of bar steels find a real saving by resorting to the use of cold finished bars. Many have taken advantage of this saving. Our Engineers and Representatives stand ready to study over your problems, involving steel applications, and with their wealth of experience to be of whatever service they can in developing economies for you through the application of the proper steels for the job.

"Try our bars and be convinced of the values that are in store for you."

Bliss & Laughlin, Inc.

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Sales Offices in all principal cities

Scrap

Little Movement as Holders Balk at Present Prices—Heavy Melt Persists

Pittsburgh—Although ingot melting rates have increased four-fold the past three months, scrap prices have roughly only doubled. No. 1 heavy melting steel scrap has difficulty breaking through a $12 top. This is caused partly by direct scrap deals. Many of these have been from railroads direct but in addition on reciprocity arrangements many small fabricators of steel have contributed through shipment of scrap direct into the steel producer's inventory. Thereby scrap is losing much of its barometric characteristic. There continues to be little mill buying and aside from a few small sales during the past week all within present quoted ranges, there is little activity. Steel rails and bundles have both been sold into

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL	
Birmingham	8.00 to 8.50
Boston, dealers	5.50 to 5.75
Buffalo, No. 1	10.50 to 11.00
Buffalo, No. 2	9.00 to 9.50
Chicago	9.00
Cleve., No. 1	9.00 to 9.50
Cleve., No. 2	8.50 to 9.00
Det., No. 1	8.00 to 8.50
Det., No. 2	7.50 to 8.00
E. Pa., del. mill	9.50
E. Pa., No. 2 del.	8.00 to 8.50
Federal, Ill.	8.00 to 8.50
Granite City, Ill.	7.25 to 7.75
N. Y., deal. R. R.	6.00
N. Y., deal. No. 2	4.50 to 5.00
N. Y. deal. yd.	2.50 to 3.00
Pitts., No. 1	11.50 to 12.00
St. L. No. 1 sel.	8.00 to 8.50
Valleys, No. 1	12.00 to 12.50

COMPRESSED SHEETS	
Buffalo, dealers	8.50 to 9.50
Chi. (Factory)	7.50 to 8.00
Cleveland	9.00 to 9.50
Detroit	8.00 to 8.50
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	11.50 to 12.00
Valleys	11.50 to 12.00

BUNDLED SHEETS		
Buffalo	5.00 to	5.50
Cincinnati, del	4.75 to	5.25
Cleveland	6.50 to	7.00
Eastern Pa.	7.00 to	7.50
Pittsburgh	10.50 to	11.00
St. Louis	4.50 to	5.00

SHEET CLIPPINGS LOOSE	
Chicago	3.50 to 4.00
Cincinnati	3.00 to 3.50
Detroit	3.50 to 4.00
St. Louis	4.00 to 4.50

STEEL RAILS SHORT	
Birmingham	10.50 to 10.75
Boston, dealers	4.75 to 5.25
Buffalo	11.00 to 11.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.50 to 11.00
Cincinnati, del.	10.50 to 11.00
Detroit	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.25 to 12.75
St. Louis	10.50 to 11.00

STOVE PLATE		
Birmingham	7.00 to	7.50
Boston, dealers	2.50 to	2.75
Buffalo	8.75 to	9.00
Chicago, net	7.00 to	7.50
Cinci., deal. net	4.50 to	5.00
Detroit, net	4.00 to	4.50
Eastern Pa.	7.00 to	7.50
N. Y. deal. Fdry.		5.00
St. Louis	7.00 to	7.50

COUPLERS, SPRINGS	
Buffalo	10.50 to 11.50
Chicago	9.50 to 10.00
Eastern Pa.	10.50 to 11.50
Pittsburgh	13.00 to 13.50
St. Louis	9.50 to 10.00

ANGLE BARS—STEEL	
Chicago	9.00 to 9.50
St. Louis	9.00 to 9.50

LOW PHOSPHORUS	
Buffalo, billets and bloom crops	10.50 to 11.50
Cleveland bil. and bloom crops	12.00 to 13.00
Eastern Pa.	11.50 to 12.00
Pittsburgh billet bloom crops	13.75 to 14.25
Pitts., sheet bar crops	13.75 to 14.25

FROGS, SWITCHES	
Chicago	8.50 to 9.00
St. Louis	9.00 to 9.50

SHOVELING STEEL	
Chicago	9.00
Cleveland	5.75 to 6.00
St. Louis	8.00 to 8.50

RAILROAD WROUGHT	
Birmingham	7.00 to 7.50
Boston, dealers	2.00 to 2.50
Buffalo, No. 1	6.50 to 7.00
Buffalo, No. 2	10.50 to 11.00
Chi., No. 1, net	8.00 to 8.50
Chi., No. 2	9.00
Cinci., No. 2	7.50 to 8.00
Eastern Pa.	10.00 to 10.50
N. Y., No. 1, deal.	4.00 to 5.00
Pitts., No. 1	11.50 to 12.00
St. Louis, No. 1	6.00 to 6.50
St. Louis, No. 2	8.00 to 8.50

SPECIFICATION PIPE	
Boston	3.00 to 4.00
Eastern Pa.	7.50 to 8.50
N. Y., deal.	3.25 to 3.75

BUSHELING	
Buffalo, No. 1	8.50 to 9.50
Chicago, No. 1	7.50 to 8.00
Cinci., No. 1 deal.	5.00 to 5.50
Cinci., No. 2	2.75 to 3.00
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new	7.00 to 7.50
St. Louis, No. 1	5.25 to 5.75
Val. new No. 1	11.00 to 11.50

MACHINE TURNINGS	
Birmingham	2.50 to 3.00
Boston, dealers	2.25 to 2.50
Buffalo	5.50 to 6.25
Chicago	5.00 to 5.50
Cinci., deal.	4.00 to 4.50
Cleveland	5.50 to 6.00
Detroit	5.00 to 5.50
Eastern Pa.	6.75
N. Y., deal.	2.00 to 2.50
Pittsburgh	8.50 to 9.00
St. Louis	3.00 to 3.50
Valleys	8.75 to 9.25

BORINGS AND TURNINGS *For Blast Furnace Use*	
Boston, dealers	1.50 to 1.75
Buffalo	5.50 to 6.50
Cinci., deal.	4.00 to 4.50
Cleveland	6.25 to 6.75
Detroit	5.75 to 6.25
Eastern Pa.	6.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00

CAST IRON BORINGS	
Birming., chem.	8.50 to 9.50
Birming., plain	2.50 to 3.00
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	5.75 to 6.50
Chicago	5.50 to 6.00
Cinci., deal.	4.00 to 4.50
Cleveland	6.25 to 6.75
Detroit	5.75 to 6.25
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	10.00 to 12.00
N. Y., deal.	2.50 to 3.00
Pittsburgh	7.75 to 8.25
St. Louis	3.50 to 4.00

PIPE AND FLUES	
Cinci., deal.	4.00 to 4.50

RAILROAD GRATE BARS	
Buffalo	5.00 to 5.50
Chicago, net	7.50 to 8.00
Cincinnati	4.50 to 5.00
Eastern Pa.	7.00 to 7.50
N. Y., deal.	4.00 to 4.50
St. Louis	5.00 to 5.50

FORGE FLASHINGS	
Boston, dealers	3.50 to 4.00
Buffalo	6.50 to 7.00
Cleve. ov. 10 in.	8.25 to 8.50
Detroit	5.00 to 5.50

FORGE SCRAP	
Boston, dealers	1.75 to 2.00
Chicago	9.50 to 10.00
Eastern Pa., del.	8.00 to 9.00

ARCH BARS, TRANSOMS	
Chicago, net	7.50 to 8.00
St. Louis	8.50 to 9.00

AXLE TURNINGS	
Boston, deal.	2.50 to 3.00
Buffalo	6.00 to 6.50
Chi., elec. fce.	6.50 to 7.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.50 to 8.50
St. Louis	4.00 to 4.50

STEEL CAR AXLES	
Birmingham	9.00 to 9.50
Boston, ship. pt.	8.00 to 8.50
Buffalo	10.00 to 11.00
Chicago, net	11.00 to 11.50
Eastern Pa.	14.50
St. Louis	9.25 to 9.75

SHAFTING	
Boston, ship. pt.	8.50 to 8.75
Eastern Pa.	13.50
N. Y., deal.	8.00 to 8.50
St. Louis	7.50 to 8.00

CAR WHEELS	
Birming., iron	9.00 to 9.50
Boston, iron deal.	5.00 to 5.50
Buffalo, iron	8.00 to 9.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi., rolled steel	9.50 to 10.00
Cincinnati iron	7.25 to 7.75
E. Pa. iron	9.50 to 10.00
E. Pa. steel	11.00 to 11.50
Pitts., iron	11.00 to 11.50
Pitts., steel	13.00 to 13.50
St. Louis, iron	8.00 to 8.50
St. Louis, steel	9.00 to 9.50

NO. 1 CAST SCRAP	
Birmingham	8.00 to 8.50
Boston, No. 2	3.50 to 3.75
Boston, textile	6.50 to 7.00
Buffalo, cupola	9.50 to 10.00
Buffalo (mach.)	10.00 to 11.00
Chicago, agri. net	8.00 to 8.50
Chi., mach. net	8.50 to 9.00
Chi., railroad net	8.50 to 9.00
Cinci., mach. cup.	7.50 to 8.00
Cleve. cupola	8.50 to 9.50
Detroit, net	8.50 to 9.00
E. Pa. cupola	10.00 to 11.00
N. Y., cup. deal.	6.00 to 6.50
N. Y., del. local foundries	9.00 to 9.50
Pitts., cupola	10.00 to 11.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. Louis, No. 1	8.00 to 8.50
St. L. No. 1 mach.	7.50 to 8.00

HEAVY CAST	
Boston, del.	4.25 to 4.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break.	7.00 to 7.50
Cleve., break	6.50 to 7.00
Detroit, auto net	9.00 to 9.50
Detroit, break.	6.50 to 7.00
Eastern Pa.	9.50 to 10.00
N. Y. No. 1, deal.	6.00
N. Y. break, deal.	5.50 to 5.75
Pittsburgh	9.00 to 9.50

MALLEABLE	
Boston, consum.	9.50 to 10.00
Buffalo	11.00 to 11.50
Chicago, R. R.	10.00 to 10.50
Cinci., agri. del.	8.00 to 8.50
Cinci., R. R. del.	8.75 to 9.25
Cleveland, rail	10.00 to 10.50
Detroit, auto	7.50 to 8.00
St. Louis R. R.	8.50 to 9.00

RAILS FOR ROLLING *5 feet and over*	
Birmingham	8.50 to 9.50
Boston, deal.	5.00 to 5.50
Buffalo	8.50 to 9.50
Chicago	10.00 to 10.50
Eastern Pa.	10.00 to 11.00
New York dealer	5.50 to 6.00
St. Louis	9.50 to 10.00

LOCOMOTIVE TIRES	
Chicago, cut	9.00 to 9.50
St. L., No. 1	6.50 to 7.00

LOW PHOS. PUNCHINGS	
Buffalo	10.50 to 11.50
Chicago	10.00 to 10.50
Eastern Pa.	10.00
Pittsburgh	13.25 to 13.75

consumption within the present range. Although buying orders are not forthcoming, many dealers indicate they would not sell tonnage short at less than $12.50.

The leading interest has just entered the market with an offer of $11.75 for heavy melting steel for shipment to Pittsburgh plants.

Cleveland—Arrival of three steamers and a barge loaded with scrap from Duluth and the Detroit district has further blanketed the local market. Mills show no interest in tonnage under these conditions. Prices are firm and holders of stocks are slow to sell at prevailing levels.

Chicago—Scrap prices are stronger and dealers have found it necessary to raise prices in obtaining material. No new mill buying of heavy melting steel is noted, and while last sales were made at $9, dealers find little material available at less than this figure and higher prices are looked for on ensuing purchases. Shipments against orders reflect the rising trend in consumption among foundries as well as steel plants. Heavy melting steel may be quoted $9, with prices on other grades strong but unchanged.

Boston—Larger consumers of steelmaking grades of scrap have good supplies, although some buying of small lots continues, Worcester paying around $7, delivered, for heavy melting steel and up to $7.50 for tonnage. For Pittsburgh, dealers are offering around $5.75. Breakable cast brings near $4.50, f.o.b., while some scattered business on No. 1 machinery cast has been done at $7 to $7.50, delivered.

New York—Scrap prices are firm with slight advances on several grades. Cast iron car wheels, steel shafting, No. 1 heavy cast and yard steel are stronger, and No. 1 heavy melting steel is firm at $6, shipping point. While buying is not heavy shipments against contracts are steady and some fair new volume is being done. A moderate, but steady volume of No. 2 scrap is moving to the Buffalo district by barge.

Philadelphia—Prices have been advanced on several grades of scrap, notably blast furnace borings and turnings, which are now $6, delivered, and machine shop turnings, $6.75. These increases were on further purchases for Conshohocken, Pa. Bethlehem Steel Co. has placed several hundred tons of prime and second grade steel for Sparrows Point, Md., at $8.50 and $7.50, delivered, respectively.

Buffalo—With melt of scrap mounting rapidly sellers foresee a rapidly strengthening market. They point out that prices here have been lagging behind other consuming areas and say the firmness with which scrap is held is another strong factor. It is reported that fair tonages of No. 2 heavy melting steel have been purchased at $9 and that blast furnace scrap has brought as high as $6.25 delivered to local markets.

Detroit—Iron and steel scrap continues basically strong, but with no revision of prices this week. Increased production of automobiles resulting in heavier offerings of scrap, is tending to stabilize the market. The outside markets, however, are increasingly strong and may pull up the local market within two weeks.

Cincinnati—Activity in the scrap market here has been chiefly against contracts with mill buying fairly dormant. Most grades are in demand but offering prices fail to bring out tonnage. Quotations on short rails, iron car wheels, malleable and stove plate are higher.

St. Louis—There has been a fur-

SIXTY BILLION SCUFFLING FEET GRIND AWAY FOR EIGHTEEN YEARS

on "AW" Rolled Steel Floor Plate

Muddy boots and Paris pumps, high heels and hobnails—a ceaseless parade pounds and shuffles and scuffs along for eighteen years before the Rolled Steel floors in the vestibules of New York City's subway cars give up the battle and are ready for replacement.

In all the world there is no other service so severe—no other floor material which could meet that drastic test.

Alan Wood rolls floor plate in the safe and scientific Diamond and Diamondette patterns for service of any kind and in any ferrous or non-ferrous metal. Use it and you will enjoy long life and sure protection for your shop floors, trench covers, runways, platforms, balconies and the like.

Slip-proof
Oil-proof
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Crack-proof

We gladly work on difficult problems.

Safe
Sightly
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107 Years Iron and Steel Making Experience

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Seattle
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Los Angeles
Houston

ther tightening in iron and steel scrap, both in prices and available supplies.

Birmingham, Ala.—Activity in iron and steel scrap is unabated at firm prices. Only spot business is taken by some dealers while others are shipping and taking orders for one to three months ahead.

Toronto, Ont.—Sales of iron and steel scrap are improving. The movement in steel grades is mostly for export but with the opening of steel mills at Hamilton, Ont., and Sydney, N. S., it is expected there will soon be a better demand for domestic consumption.

Cold-Finished Orders Best In Nearly Three Years

Cold Finished Prices, Page 49

Pittsburgh—Specifications for cold-finished bars this week will determine largely the extent of shipments during July to the automotive trade. Shipments and specifications this month are calculated to be the best in almost three years. Sellers are still refusing to quote July 1, but will accept tonnage until June 30 for shipment through all of July. The present price is 1.70c, Pittsburgh, for 5 to 10-ton lots.

Equipment

Further Gains Made—Sellers Getting Into Profit Area

Boston—Operating schedules in most machine tool plants have increased, in some instances a 20 per cent improvement in activity over the low point. Textile machinery builders in the Worcester, Mass., and Rhode Island districts have registered the best gains, both in the demand for repair parts and new units. A Worcester loom builder will install 300 units for a Shelby, N. C., mill expansion. Bulk of interest for new metalworking machinery is for special tools, standard machines moving slowly.

B. F. Sturtevant Co., Boston, is low on draft blower equipment for the navy at $7186. Some small export business has been done by grinding machinery builders.

New York—More machinery and equipment is being bid, but orders are scattering. For its 207th street shops, Board of Transportation, New York, is closing June 26 on a small list, including two lathes, a grinder and sensitive drill. An eastern truck builder is buying two special milling machines. A miscellaneous supplemental list has been bought in this country for a Russian tractor plant. Japan is again inquiring for machinery here.

The navy department opens bids July 11 on list, including engine lathes, combination grinders and bench drills. General improvement in industrial schedules holds, the gains in some plants being substantial. Operations are heavier at the Schenectady works of the General Electric Co. There has been a sharp increase in the demand for motors for steel mill equipment.

Cleveland—Sales continue to improve, in many cases remarkably. One dealer paraphrased the situation by saying that sellers had reached the point where they were feeling so fine they were afraid of being sick. After three years of red ink, sales ledgers are again in the black. Business is spread over a wide range of industries, with conditions ideal for moving used equipment. The next step is to new equipment and manufacturers are reported eager to contract for new machinery if they can be guaranteed that present operations will hold. Instances are reported of buyers having spent available funds on raw materials stocks and being forced to ask for credit against new equipment purchases.

C. H. Gosiger Machinery Co., Dayton, O., is low on two universal-type milling machines and two turret lathes for Wright Field, Dayton. Bertsch & Co., Cambridge City, Ind., is low on a squaring, notching and slitting shear.

Pittsburgh—The most pronounced activity in steel mill equipment is in rolls, demand for which has kept several foundries here on heavier operating schedules. Much of the roll buying is intended for immediate use and practically no spares are being specified. Pittsburgh Steel Foundry Co., Glassport, Pa., is completing a cinder ladle, claimed to be the largest ever made of cast steel. It has a capacity of 1200 cubic feet and is being made for the Carrie furnaces of Carnegie Steel Co., Pittsburgh. Wheeling Steel Corp. is installing four additional tin pots at its Yorkville, O., tin mill. **The plant** recently put into operation six new annealing furnaces when some of the equipment was moved from Steubenville, O., into the Yorkville, O., division.

NOTICE OF SALE

The A. G. REEVES STEEL CONSTRUCTION Co.
Alliance, Ohio

Notice is hereby given that on the 8th day of July, 1933, A.D., at 9:30 o'clock A.M., and continuing until completed, by virtue of a resolution of the Board of Directors of The A. G. Reeves Steel Construction Company duly passed, that all the land and buildings known as the plant of said company located in the City of Alliance, Stark County, Ohio, together with all equipment, machinery, tools, inventory, work in process, etc., will be sold at public auction to the highest bidder; that a complete list of the property so to be sold is on file in the office of the company in the City of Alliance, Stark County, Ohio, and open for inspection to all prospective purchasers and others interested at any reasonable hour on the day of sale or prior thereto; that said plant, machinery and equipment and all property so to be sold will be open for inspection to all prospective purchasers and others interested at any reasonable hour on the day of the sale or prior thereto. The property to be sold as herein described will be sold in one lot only.

Sale to commence at 9:30 o'clock A. M., Saturday, July 8th, 1933, at the plant of the Company located at No. 338 East Rush Street in said City of Alliance, Stark County, Ohio. Terms of sale—cash. A cash deposit of $10,000.00 will be required either in cash or certified check by all who intend to bid, to be deposited with the Treasurer of the Company prior to the commencement of said sale.

The right is expressly reserved to the seller or to any officer or stockholder of the seller to bid and buy the property herein offered for sale.

The A. G. REEVES STEEL CONSTRUCTION Co.
By— A. G. Reeves, *President*
By— J. R. Temple, *Secretary*

Warehouse

Buying Continues Steady—Prices Are Unchanged

Pittsburgh—Carriage and machine bolts remain quoted 70 off list despite the recent change in producers' discounts. Both common and cement coated nails are now quoted $2.15, and black wire at 2.55c and galvanized wire at 2.90c, all warehouse base, are recent price developments. Bars and small shapes are the most active, with total warehouse sales running well ahead of the same period in May. No third-quarter prices have as yet been named by jobbers in this district. The sheet schedule is steady.

Cleveland—Warehouse business here holds at the improved rate noted earlier in June, with buying well diversified. Pending decision by manufacturers, warehouse prices are unchanged. Advances in some grades of sheets is considered an early possibility.

New York—Formal announcement of an advance in sheet prices

Warehouse prices being unchanged from last week the table is omitted this week.

out of warehouse is withheld, but leading jobbers expect an early increase. Warehouse volume has held gains made several weeks ago and June business with most distributors will be about that of the previous month.

Boston—New England jobbers are generally holding the increased volume, but most is supplied by the larger accounts. Industrial replacements have stimulated business with warehouses.

Detroit—The improvement of the past few months continues unabated in the iron and steel warehouse market. Orders are a little more numerous, but the unsettled mill market is having something of a disturbing effect. Prices are unchanged.

Philadelphia—June will be the best month so far this year for local jobbers, with volume, orders and revenue all exceeding previous records. Prices are unchanged.

Cincinnati—Quotations are being maintained unaltered by warehouses. Demand is steadily increasing, chiefly from varied manufacturing consumers.

St. Louis—Despite the handicap of small building operations, iron and steel warehouses have continued steady improvement. Gradual expansion in demand from the general manufacturing trade is noted with brewery requirements, directly and indirectly, making a very favorable condition.

Basic Principles For Trade Codes

(*Concluded from Page* 12)

lowing principles should be given consideration:

(a) Basic code provisions relating to maximum hours may involve appropriate consideration of the varying conditions and requirements of the several industries and the state of employment therein. An average work week should be designed so far as possible to provide for such a spread of employment as will provide work so far as practical for employes normally attached to the particular industry.

(b) Minimum wage scales should be sufficient to furnish compensation for the hours of work as limited, sufficient in fact to provide a decent standard of living in the locality where the workers reside.

(c) Conditions of employment should contain necessary safeguards for the health and safety of the workers and for stabilization of their employment.

(d) The following principle emphasized in the President's statement should be recognized and adhered to:

I am fully aware that wage increases will eventually raise costs, but I ask that managements give first consideration to the improvement of operating figures by greatly increased sales to be expected from the rising purchasing power of the public. That is good economics and good business. The aim of this whole effort is to restore our rich domestic market by raising its vast consuming capacity. If we now inflate prices as fast and as far as we increase wages, the whole project will be set at naught. We cannot hope for the full effect of this plan unless, in these first critical months, and, even at the expense of full initial profits, we defer price increases as long as possible.

In the drafting of codes, attention is especially directed to this suggestion by the President that the recovery administration cannot be effective unless the consumers' buying power is protected. There will be full protection for the consumer. The codes should recognize the interest of the public in the matter of prices.

(8) At the hearings described in paragraph 2 every trade association or group proposing a code should be prepared to establish by evidence the requirements of section 3 (a), clause 1, of the act which provides:

that such associations or groups impose no inequitable restrictions on admission to membership therein and are truly representative to such trades or industries or subdivisions thereof.

and of section 3 (a), clause 2, of the act which provides:

that such code or codes are not designed to promote monopolies or to eliminate or oppress small enterprises and will not operate to discriminate against them, and will tend to effectuate the policy of this title.

(9) It is the purpose of the act to encourage a voluntary submission of codes of fair competition and the procedure offered by these provisions for basic codes is intended to simplify and expedite this process. But in the event that codes of fair competition are not voluntarily submitted, attention is invited to other pertinent provisions of the act. It is provided in section 3 (d) of the act that the President upon his own motion or if complaint is made, may after public notice and hearing prescribe a code of fair competition for a trade or industry or subdivision thereof. Section 3 (d) reads as follows:

Upon his own motion, or if complaint is made to the President that abuses inimical to the public interest and contrary to the policy herein declared are prevalent in any trade or industry or subdivision thereof, and if no code of fair competition therefor has theretofore been approved by the President, the President, after such public notice and hearing as he shall specify, may prescribe and approve a code of fair competition for such trade or industry or subdivision thereof, which shall have the same effect as a code of fair competition approved by the President under subsection (a) of this section.

In this same connection, attention should be directed to the requirements of sections 7 (b) and (c), which read as follows:

The President shall, so far as practicable, afford every opportunity to employers and employes in any trade or industry or subdivision thereof with respect to which the conditions referred to in clauses (1) and (2) of subsection (a) prevail to establish by mutual agreement, the standards as to the maximum hours of labor, minimum rates of pay, maximum machine-load of employes, and such other conditions of employment as may be necessary in such trade or industry or subdivision thereof to effectuate the policy of this title; and the standards established in such agreements, when approved by the President, shall have the same effect as a code of fair competition, approved by the President under subsection (a) of section 3.

(c) Where no such mutual agreement has been approved by the President he may investigate the labor practices, policies, wages, hours of labor, and conditions of employment in such trade or industry or subdivision thereof; and upon the basis of such investigations, and after such hearings as the President finds advisable, he is authorized to prescribe a limited code of fair competition fixing such maximum hours of labor, minimum rates of pay, and other conditions of employment in the trade or industry or subdivision thereof investigated as he finds to be necessary to effectuate the policy of this title, which shall have the same effect as a code of fair competition approved by the President under subsection (a) of section 3. The President may differentiate according to experience and skill of the employes affected and according to the locality of employment; but no attempt shall be made to introduce any classification according to the nature of the work involved which might tend to set a maximum as well as a minimum wage.

Under the foregoing provisions of the act, if no code or agreement establishing standards as to maximum hours of labor, minimum rates of pay, and conditions of employment has been approved by the President, the President is authorized under the foregoing section 7 (c) to prescribe a limited code upon the basis of such investigations and after such hearings as he finds advisable.

HUGH S. JOHNSON,
Administrator.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 8.00c, Conn., for copper

Sheets	
Yellow brass (high)	13.25
Copper, hot rolled	15.62½
Lead sheets, cut to jobbers	7.75
Zinc sheets (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	14.87½
Seamless copper	15.12½
Rods	
Yellow brass (high, full turning)	10.75
Naval brass	11.87½
Anodes	
Copper, untrimmed	13.00
Wire	
Yellow brass (high)	13.25

Old Metals

Dealers' buying prices, cents lb

No. 1 Composition Red Brass	
New York	4.00 to 4.25
Chicago	4.25 to 4.50
Cleveland	5.00 to 5.50
St. Louis	4.25 to 4.75
Heavy Yellow Brass	
New York	3.00 to 3.25
Heavy Copper and Wire	
New York	5.75 to 5.87½
Chicago, No. 1	5.50 to 5.75
Cleveland	5.00 to 5.50
St. Louis	4.75 to 5.00
Composition Brass Borings	
New York	3.50 to 3.75
Yellow Brass Tubing	
Cleveland	3.25 to 3.75
Light Copper	
New York	4.50 to 4.62½
Chicago	4.25 to 4.50
Cleveland	4.50 to 5.00
St. Louis	4.50 to 4.75
Light Brass	
Chicago	2.75 to 3.00
Cleveland	2.50 to 3.00
St. Louis	2.75 to 3.00
Lead	
New York	2.87½ to 3.12½
Cleveland	2.75 to 3.00
Chicago	2.50 to 2.75
St. Louis	2.75 to 3.00
Zinc	
New York	2.00 to 2.12½
Cleveland	2.00 to 2.25
Chicago	2.00 to 2.25
St. Louis	2.00 to 2.25
Aluminum	
Clippings, new, soft, Cleve.	13.00 to 14.50
Clippings, hard, Cleveland	8.00 to 10.00
Borings, Cleveland	5.00 to 5.50
Mixed cast, Cleveland	7.00 to 7.50
Mixed cast, St. Louis	6.50 to 7.00

Secondary Metals

Brass ingot, 85-5-5-5	8.00
Remelt aluminum No. 12	11.50 to 12.50

Metals

Increased Buoyancy Develops As Users Show More Interest—Tin Erratic But Higher

New York—Increased buoyancy developed in the nonferrous metals toward the latter part of the week. Better demand appeared generally and prices could be regarded as steady to strong. Some time is expected to be required before codes of practice are set up for the metal trade but the general feeling is that higher prices will be one result.

Copper—Producers continued to maintain a firm position as regards prices, holding electrolytic at 8.00c, Connecticut, but speculative interests continued to make offerings at one-fourth to ⅜ cent under this level. Little speculative metal was in evidence toward the close of the week, however, and producers reported increased inquiry and a good volume of buying for third quarter and October delivery. Foreign demand improved considerably with sales being made as high as 8.05c, c.i.f European ports.

Lead — Sales were in increased volume. Larger producers had no difficulty in balancing sales with ore intake. Buying was widespread with corroders and cable makers the most active participants in the market. July business is running 25 per cent ahead of that for June. Prices were firm at 4.05c, East St. Louis, and 4.20c, New York.

Zinc—Sales of prime western metal were spotty but some sellers booked fair tonnages. The market developed increased strength with the recent level of 4.30c, East St. Louis, generally disappearing. Some sellers asked 4.40c for spot and July shipment. A strong ore market continued a supporting factor.

Tin—Quotations fluctuated sharply during the week, reflecting irregular but generally higher rates on sterling exchange and the erratic movement of prices on the London Metal exchange. Tin plate makers were good takers. Some consumers have been turning to English refined metal due to the Straits premiums.

Antimony—The market was relatively quiet with quotations largely unchanged although some sellers asked premiums on spot.

Aluminum—Remelt grades continued strong. Virgin was quiet.

Nickel—International Nickel Co. has increased operations to 40 per cent of capacity on improvement in demand.

By-Products More Active

New York—Industrial demand for toluol and benzol has increased, lacquermakers taking heavy shipments of toluol, reflecting high operations in the automobile and refrigerator industries. Rubber and chemical industries are taking benzol in larger quantities. Prices are firm. Phenol is slightly more active at unchanged prices.

Coke By-Products

	Spot
Per Gallon Producers' Plants, Tank Lots	
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.15

Quicksilver Steady

New York—Quicksilver prices are fairly steady, with sales of round lots reported at $60 and $60.50. Small lots range from $61 to $62, a virgin flask of 76 pounds, the top price being asked on single flasks .

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper, Electro., del. Conn.	Copper, Lake, del. Midwest	Copper, Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
June 17	8.00	8.12½	7.75	42.75	43.05	4.20	4.05	4.27½	*22.90	6.50	35.00
June 19	8.00	8.12½	7.75	44.62½	44.90	4.20	4.05	4.30	*22.90	6.50	35.00
June 20	8.00	8.12½	7.75	45.50	45.80	4.20	4.05	4.35	*22.90	6.50	35.00
June 21	8.00	8.12½	7.75	44.75	45.00	4.20	4.05	4.35	*22.90	6.50	35.00
June 22	8.00	8.12½	7.75	45.37½	45.60	4.20	4.05	4.35	*22.90	6.50	35.00
June 23	8.00	8.12½	7.75	44.50	44.75	4.20	4.05	4.35	*22.90	6.50	35.00

*Nominal quotation. Market range 19.90c to 22.90c.

Pacific Coast

Better Sentiment and Larger Buying Are Evident, with Much Work in Prospect—Plates for Caissons and Penstock Give 12,000-Ton Total—Cast Pipe Buying Is Increasing

San Francisco—(*By Air Mail*)—Further improvement in demand for iron and steel products is noted, the structural shape, plate and cast iron pipe markets especially being active. The largest award of the week involved 7500 tons of plates for caissons for the east and west bay substructures of the San Francisco-Oakland bridge, placed with the Moore Dry Dock Co., Oakland, Calif. Prices are firming and advances are looked for soon.

The reinforcing bar market is quiet and awards aggregated less than 800 tons. Soule Steel Co., San Francisco, booked 135 tons for a terminal in Oakland and unnamed interests took 172 tons for a planetarium in Los Angeles. N. P. Severin Co., Chicago, low bidder on 700 tons for the federal building in San Francisco, has withdrawn its bid. Bids will be opened shortly on 198 tons for the Soto street bridge, Los Angeles.

Plate awards exceeded 12,000 tons, the largest weekly total of the year. Western Pipe & Steel Co., Los Angeles, booked 4300 tons for the Bouquet canyon penstock, Los Angeles, involving 80 to 94-inch steel pipe ranging from ⅜ to 1-inch plates. Great Falls Iron Works, Helena, Mont., took 100 tons for two tanks and towers for Helena, Mont.

Awards of structural steel were the heaviest in over a month and totaled 3195 tons. Moore Drydock Co. secured 2500 tons for the east and west substructures of the San Francisco-Oakland bridge. McClintic-Marshall Corp. took 250 tons for a viaduct for the Southern Pacific Co. at Madrona, Calif. New bids will be asked soon for 4000 tons for the federal building, San Francisco. Key System Ltd., will open bids on 600 tons for a new pier shed in Oakland, Calif., which was recently destroyed by fire. Bids will be taken soon on 458 tons for the Soto street bridge, Los Angeles. Plain shapes hold at 2.10c, c.i.f.

Seattle Buying Gains

Seattle—While iron and steel prices have not advanced this month, the trade awaits announcement covering third quarter. Meantime both mill agencies and wholesale jobbers will not quote beyond June 30. The result is that there is some forward buying although most retailers are not in position to lay in stocks.

Awards this week exceeded 2000 tons, the largest being 1300 tons of 20-inch centrifugal cast iron pipe for the Alki avenue extension, Seattle, to the United States Pipe & Foundry Co., Burlington, N. J. Pacific Coast Steel Corp., Seattle, has been awarded 500 gross tons of new street railway rail, 60, 82 and 140-pound, on a low bid of $29,751. The same company also booked 170 tons of tie plates for the Alaska railroad. Unnamed interests have closed for more than 100 tons of shapes for the bridge to cross the Santiam river in Oregon.

At the moment there is not much interest in scrap. Japan buyers are holding back, probably due to uncertainty of exchange. Any marked price advance would undoubtedly stimulate the export movement. Local consumption is small.

Steel in Europe

Britain and Continent Show Increasing Trade Gain

London—(*By Radio*)—Improved market tone is being maintained and the Middlesbrough district reports fairly substantial contracts. Foreign inquiries are also increasing. Stocks of hematite pig iron are still heavy. Continental producers are competing keenly for export business. The Birmingham district shows expansion, with semifinished and automobile steels active. Belgium is competing severely in galvanized sheets. Movement of Scottish black sheets is improving and tin plate sales are active.

The Continent reports export business is quiet, numerous contracts made before June 1 being dealt with, new contracts being scarce meanwhile. However the outlook begets confidence. Poland has sold some steel rails to Brazil.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 22

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
		£ s d		£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$12.40	2 18 6	$ 8.27	1 14 0
Basic bessemer	11.45	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	12.51	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$21.20	5 0 0	$11.44	2 7 0
Wire rods, No. 5 gage	31.80	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$32.86	7 15 0	$26.77	5 10 0
Merchant bars	1.22c	6 10 0	.66c	3 0 0
Structural shapes	1.39c	7 7 6	.61c	2 15 0
Plates, †¼ in. or 5 mm.	1.60c	8 5 0	.86c	3 18 6
Sheets, black, 24 gage or 0.5 mm.	1.61c	8 10 0	1.29c	5 17 6
Sheets, gal., 24 gage, corr.	1.98c	10 10 0	1.49c	6 15 0
Bands and strips	1.46c	7 15 0	.80c	3 12 6
Plain wire, base	1.65c	8 15 0	1.18c	5 7 6
Galvanized wire, base	1.98c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.27c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 3.66	0 17 3	.....	.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

		£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$13.25	3 2 6a	$ 9.84	200	$10.12	290	$18.74	63
Basic bessemer pig iron	12.51	2 19 0a*	9.35	190	8.03	230	20.68	69.50
Furnace coke	2.81	0 13 3	5.90	120	3.84	110	5.73	19.25
Billets	21.20	5 0 0	19.93	405	14.48	415	28.71	96.50
Standard rails	1.56c	8 5 0	1.53c	697	1.76c	1.100b	1.78c	132
Merchant bars	1.28c	6 15 0	1.23c	500	.84c	525	1.49c	110
Structural shapes	1.65c	8 15 0	1.21c	550	.84c	525	1.45c	107.50
Plates, †¼-in. or 5 mm.	1.61c	8 10 0	1.50c	680	1.08c	675	1.81c	127
Sheets, black	1.84c	9 15 0‡	1.87c	850‡	1.12c	700‡	1.94c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	2.27c	12 0 0	3.19c	1.450	2.32c	1,450	5.00c	370
Plain wire	1.65c	8 15 0	2.49c	1,130	2.08c	1,300	2.39c	177
Bands and strips	1.80c	9 10 0	1.28c	580	1.08c	675	1.81c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough. b Since January

Here and There in Industry

BETHLEHEM STEEL CO., Bethlehem, Pa., will open a district sales office at Houston, Tex., July 1 with J. E. Moore as district manager of sales. Offices will be in the Petroleum building, Texas avenue and Austin street. The district will include Texas and all of Louisiana except those sections east of the eastern boundaries of St. Landry, St. Martin and Iberia parishes.

William A. Gayou, it also is announced, has been appointed to succeed P. E. Anderson as resident agent of Bethlehem at Kansas City, Mo. Mr. Gayou's address is Kansas City Athletic club, Mr. Anderson is transferred to the Bethlehem staff at Houston.

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Union Drawn Steel Co., Beaver Falls, Pa., has appointed John C. Malone, 501 East Ridge road, Gary, Ind., its representative in Indiana.

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Metal Auto Parts Co., Indianapolis, is receiving an increasing volume of orders and is operating six days a week with twice as many employes as a month ago.

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Stanley Works, New Britain,, Conn., has abandoned, at least temporarily, its plan of consolidating its Newark, N. J., plant with the New Britain works. Demand for products, particularly garden implements, has increased heavily.

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Pierce Governor Co., Anderson, Ind., Neil M. McCullough, president, has had a 10 per cent increase in business over the past month and is working five and a half days per week with its regular force.

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Allsteel Press Co., 12015 South Peoria street, Chicago, manufacturer of the Verson line of punch presses and sheet metal working machinery, has appointed the W. G. Nichol Co., Mariner tower, Milwaukee, its exclusive representative in Wisconsin.

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Service Equipment Co., 1036 First avenue south, Seattle, has been appointed distributor of crushers, oil and asphalt plants for the Iowa Mfg. Co., Cedar Rapids, Iowa. Complete line of parts will be carried and a service department maintained. William Martin is president.

□ □ □

Continental Steel Corp., Kokomo, Ind., has increased its working force from 700 to more than 1200 men on full time and a recent increase in wages is in effect. Hoosier Iron Works, also at Kokomo, has increased its foundry operation from two to five days a week, the latter schedule having been in effect the past two years.

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Corundite Refractories, Pittsburgh, has been placed in receivership by federal court in an equity suit brought by the Stowe-Fuller Refractories Co., Cleveland. The Corundite Refractories Co. manufactures brick and clay products at Massillon, O., and Zoar, O., Frank Kitzmiller and C. A. Harmeier, both of Pittsburgh, were appointed receivers.

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Reed Roller Bit Co., Houston, Tex., has been advised by the American Petroleum institute, New York, that the manufacturers committee has voted to adopt the Reed full hole tool joint as standard for oilfield practice. The institute at its meeting in Chicago in October is expected officially to adopt the recommendation of the committee. Institute standards are recognized throughout the world.

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Milcor Steel Co., Milwaukee, formerly the Milwaukee Corrugating Co., has bought the stove and elbow departments of the Lamneck Products Co., Columbus, O. Part of the equipment is being moved to the Milcor branch factory at Canton, O., and the remainder to the Milwaukee works, to enlarge these departments. Several months ago Milcor purchased the Richsto Metal Trim Co., Aurora, Ill.

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Pressed Steel Tank Co., Herman Merker secretary, Milwaukee, has booked production orders for its Hackney steel beer barrels (described in STEEL, June 5, p. 33) from more than 100 breweries. Plans are under way for immediate duplication of facilities for production of these containers. The company has had much experience in manufacturing metal beer barrels for use in foreign countries and was prepared for domestic demand on legalization of the beverage.

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Allegheny Steel Co., Brackenridge, Pa., has completed an exclusive arrangement with American Chain Co., Bridgeport, Conn., whereby the latter's Page Steel & Wire Co. division at Monessen, Pa., will fabricate and sell Allegheny metal and alloys in wire form in a complete range of gages and sizes. In its Hazard Wire Rope Co. plant at Wilkes-Barre, Pa., various forms of wire rope and cable will be made from Allegheny alloys. Other subsidiaries of American Chain Co. will fabricate Allegheny metal and alloys into the various types of products they manufacture.

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Alloy Products Corp., Waukesha, Wis., specializing in the manufacture of stainless steel milk truck tanks and other containers of this metal, is installing equipment for the manufacture of a stainless steel beer barrel. Orders for upward of 75,000 units are in negotiation. The Alloy company also is supplying the National Tavern Fixture Co., subsidiary of the Manitowoc Church furniture Co., Waukesha, with beer taps, cooling coils and other apparatus.

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Wheeling Steel Corp., Wheeling, W. Va., is beginning work on the first model of a new type of steel house. Foundation work will be started June 26 at Wheeling. The new type is a result of two years study and will be offered by the Wheeling Corrugating Co., subsidiary of the Wheeling Steel Corp., with the embodiment of pre-fabricated principles. Walls, floors and ceilings will be made of welded steel sheets with the outside surface porcelain enamel coated.

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Ashton Valve Co., Cambridge, Mass., has appointed several representatives for its safety valves, steam gages and similar appliances, as follows: Maintenance Engineering Corp., 1400 Conti street, Houston, Tex.; Power Equipment Co., 1352 Madison avenue, Memphis, Tenn.; O'Brien Equipment Co., 2726 Locust boulevard, St. Louis; Rossman Industrial Supply Co., 3150 Elliott avenue, Seattle; Garrett Burgess Inc., 5050 Joy road, Detroit; Proctor Engineering Co. Inc., 28 South Gay street, Baltimore.

□ □ □

Toledo Scale Co., Toledo, O., has arranged an exhibit of practical research at its Chicago office, 2033 South Michigan avenue, during the Century of Progress fair. The purpose is to bring to the attention of industrial executives visiting the fair the results of the company's research. Scales and other measuring devices will be shown as well as the products of its subsidiary, Toledo Precision Devices Inc. The latter has developed devices for proportioning concrete, measuring textiles, packaging coffee and other purposes.

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Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has received from the Kewanee Boiler Corp., Kewanee, Ill., an order for twelve 400-ampere welders. Treadwell Construction Co., Midland, Pa., has ordered four welders of this type and William B. Scaife & Sons, Oakmont, Pa., has placed an order for four 300-ampere sets. International Harvester Co., Chicago, has ordered a 1500-ampere, multiple-operation

welder and a three-operator welder of 750 amperes capacity by the Wicks Boiler Co., Saginaw, Mich.

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Ludlum Steel Co. plant in Dunkirk, N. Y., is now working full time, with a night shift, with 450 men on the payroll, the peak of recent years.

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Horton Steel Co., Fort Erie, Ont., has resumed operations after a long period of idleness, with 30 employes recalled and more to follow.

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Brewster Co., Shreveport, La., manufacturer of oil well equipment, has established a branch sales office at Lake Charles, La., in charge of Jack Lindsay.

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Nashville Bridge Co., Nashville, Tenn., is reopening its plant at Bessemer, Ala., its first output being 2000 tons of fabricated steel for a bridge in Louisiana.

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American Foundry Co., Indianapolis, has plans under way to increase its employe personnel by about 300 men. Orders are sufficient to bring operations to the full number of hours.

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Century Electric Co., St. Louis, has increased its payroll 50 per cent over that of two months ago. Demand for motors for industrial and refrigerating use has increased markedly.

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General Refractories Co., Philadelphia, has resumed operations at its Layton plant near Connellsville, Pa., and at its Claysburg and Sproul plants in Blair county, Pennsylvania. These have been idle for some time.

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Decatur Casting Co., Decatur, Ind., a branch of Hamilton Foundry & Machine Co., Hamilton, Ind., is operating six days and six nights a week with full force. Business has been increasing for the past two months.

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Dravo Contracting Co., Pittsburgh, shipped a bargeload of structural steel June 20 from its Neville Island, Pa., shops to Pt. Pleasant, W. Va., to be used in building the Marmet and London dams on the Big Kanawha river.

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Dalton Foundries Inc., Warsaw, Ind., A. E. Morgan president, has increased wages 10 per cent for 165 employes working six days a week. This is the first increase in four years and is based on increased business.

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Colorado Fuel & Iron Co., Denver and Pueblo, Colo., will manufacture and sell a new adjustable tie plate clip recently patented by Thomas Aurelius, vice president of the company and in charge of railroad steel sales. The new clip is for use on rail curves where the strain is greatest and is in the form of an adjustable device which allows for a wider gage at the curves.

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Buffalo Pipe & Foundry Co., Buffalo, will reopen its cast iron pipe foundry at Medina, N. Y., July 5, after a year of idleness, recalling its force gradually. Ralph R. Rabe is vice president in charge of operations.

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Western Gas Construction Co., Fort Wayne, Ind., Thomas W. Stone vice president and general manager, is entering the production of water valves on an extensive scale, which will expand its valve department to three times its previous output.

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Noblitt-Sparks Industries Inc., Indianapolis, has given a wage increase to more than 900 employes in its plants at Greenwood and Columbus, Ind. The company manufactures steel tubing and other metal specialties. Both plants are working at capacity.

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McNamar Boiler & Tank Mfg. Co., Tulsa, Okla., has been organized by Henry McNamar, formerly plant superintendent and more recently trustee in bankruptcy for the Mount Cooper Boiler & Iron Works, Tulsa. Charles A. McNamar, his son, who has been operating the McNamar Boiler Works, Bridgeport, Ill., is liquidating that company and will be vice president and sales manager of the Tulsa company.

Rivet Prices Advanced $5; July Contracts Now Offered

Bolt, Nut, Rivet Prices, Page 49

Demand for bolts, nuts and rivets is holding and shows a spreading tendency among all consuming lines. Discounts put in effect several weeks ago will be continued for July only, prices beyond that month not having been determined. The present discount of 73 off for all standard bolts was an advance of about 8 per cent. On tie bolts the present discount is 60; on hot galvanized bolts 60; on elevator and step bolts 70; on small rivets 70-10 and 5. Large rivets are $2.50 per 100 pounds, Cleveland and Pittsburgh; and $2.60 Chicago and Birmingham. This is an advance of $5 a ton for rivets.

Buyers had grown so insistent on third quarter bolt, nut and rivet needs, that by the middle of last week producers decided to accept contracts, but for July only. This supersedes former quarter-to-quarter contract agreements. However, business booked for July must be shipped entirely no later than Aug. 15. Specifications continue strong with bolts and nuts in heavier demand. Lock washers are now quoted around 7.35 off list, Pittsburgh district.

Foundry Show Demonstrates Improvements in Equipment

(*Concluded from Page 45*)

displayed a number of photographs showing interesting furnace installations. Whiting Corp., Harvey, Ill., showed two colored photographs and a series of motion pictures on an artistic background.

Various types of materials handling equipment were on display. C. O. Bartlett & Snow Co., Cleveland, showed an interesting operating model of an oval-type mold conveyor as well as standard parts for conveyor systems. Osborn Mfg. Co., Cleveland, displayed light and heavy rail sections, trolleys of ⅛, ½, 1, 2 and 3-ton capacities, a 1½-ton electric hoist and a ½-ton chain hoist built in to special low headroom equipment.

Link-Belt Co., Chicago, displayed colored photographs of sand conveyors, shakeout and mold conveyors at the pouring station, etc. The company also displayed a sand revivifying unit. Shepard Niles Crane & Hoist Corp., Montour Falls, N. Y., showed through photographs the application of its line of hoists and other types of handling equipment to foundry handling problems.

Trucks, Hoists Displayed

Cut-away models of electric truck parts and a hand operated lift truck were exhibited by Yale & Towne Mfg. Co., Stamford, Conn., to show the working mechanism. The company also showed a 5-ton tramrail type chain hoist and a 1-ton electric chain hoist. McCollum Hoist & Mfg. Co., Downers Grove, Ill., exhibited a number of electric hoists ranging in capacity from ¼ to 1-ton. Champion Pneumatic Machinery Co., Chicago, showed a line of small air compressors applicable to foundry work.

Moltrup Steel Products Co., Beaver Falls, Pa., displayed representative specimens of the line of flat steel pattern plates, core plates, bottom boards that it manufactures. The exhibit also included cold drawn steel rounds, squares, hexagons, flats and special shapes for a variety of uses. Several different types of thermocouples and heat indicating meters were shown by Illinois Testing Laboratories, Chicago.

Vanadium Corp. of America, Bridgeville, Pa., displayed a large locomotive driving wheel made of vanadium steel. International Nickel Co., New York, exhibited several types of laboratory apparatus to show the relation between laboratory tests and commercial application of its products, and also showed a motion picture on the same subject.

Construction and Enterprise

New England

WALLINGFORD, CONN.—Wallingford Steel Co. will build a plant addition 45 x 220 feet to be used for pickling operations.

New York

NEW YORK—Cutler & Bashein Metal Co. has been incorporated with $20,000 capital to deal in scrap iron and metals, by Samuel Fish, Court street, Brooklyn, N. Y., and Bernard L. Golleb, 4602 North Tenth street, Philadelphia.

New Jersey

JERSEY CITY, N. J.—Deslauriers Steel Mold Co. has been incorporated with 2500 shares no par value to manufacture molds, by John G. Flannigan, 1 Exchange place, Jersey City, N. J.

RIDGEWOOD, N. J.—Weitling-Henry-Dale Castings Corp. has been incorporated with $100,000 capital to operate a foundry, by Conklin & Montross, 63 Wall street, New York, attorneys.

Pennsylvania

CONWAY, PA.—An explosion June 11 completely demolished the municipal waterworks here. Building and equipment will be replaced.

CORAOPOLIS, PA.—Canfield Oil Co., Cleveland, H. M. Carruth secretary, will build a new unit at its plant at Coraopolis, Pa., including a tube still, fractionating tower and secondary fractionating tower, storage tanks, pumps, receiving and control house and auxiliary equipment. The continuous tube still will produce the equivalent of output of six batch stills.

JEANETTE, PA.—Victor Brewing Co. has started work on an addition for storage and fermenting tanks, at a cost of about $75,000.

KNOXVILLE, Pa.—Lester M. Wheaton, Knoxville, Pa., has organized the Tioga Natural Gas Co. to drill for natural gas in the new Tioga field where extensive leases have been acquired.

PITTSBURGH—Pittsburgh Coal Co. has asked federal permission to build a coal unloading dock on the Beaver river near its mouth, about 40 miles below Pittsburgh on the Ohio river.

SCHENLEY, PA.—Joseph A. Finch & Sons have awarded a general contract to Rust Engineering Co., Pittsburgh, for a 9-story warehouse, 133 x 146 feet.

Michigan

BAY CITY, MICH.—National Electric Welding Machine Co., 1846 North Trumbull street, has been incorporated with 1200 shares no par value to manufacture welding machines, by Edward C. Smith, 406 North Birney street, Bay City, Mich.

DETROIT—Crown-Craft Corp. has been incorporated to manufacture aerial propellers and airplane equipment, with 2500 shares no par value, by Emil Klump, 12115 Wilshire avenue, Detroit.

DETROIT—Proctor-Keefe Body Co., 7725 Dix avenue, has been incorporated with $15,000 capital to manufacture motor truck bodies, by Fred G. Proctor, 4317 Leslie avenue, Detroit.

HOUGHTON, MICH. — Michigan Smelting Co. has been incorporated with 50 shares no par value to engage in the refining of ores, by William H. Schacht, Painesdale, Mich.

LANSING, MICH.—Beverage Equipment & Supply Co. Inc., 214 Tussing building, has been incorporated with 10,000 shares no par value to manufacture beverage equipment, by H. G. Foster, 1526 Jerome street, Lansing, Mich.

Ohio

CLEVELAND — Contract Welders Inc. has been incorporated with 250 shares no par value by Hawgood & Van Horn, Terminal Tower building, Cleveland.

Indiana

EAST CHICAGO, IND.—Crawford Vaive & Mfg. Co. has been incorporated with $300,000 capital to manufacture valves and power plant appliances, by W. W. Crawford, Frederick C. Crumsaker and Jay E. Darlington.

FORT WAYNE, IND.—Old Fort Engineering Corp. has been incorporated with 1000 shares no par value to manufacture mechanical devices, by Donald Billinghurst, Harry E. Bull and Robert C. Bourse.

HAMMOND, IND.—Friedman & Winterhoff Inc. has been incorporated to deal in metal products, by Dave Friedman, Herman Winterhoff and associates.

INDIANAPOLIS—South Side Body Co. Inc. has been incorporated with 100 shares no par value to manufacture automobile and truck equipment, by Charles A. Huffman, Walter N. South and associates.

INDIANAPOLIS — Pneumatic Motor Corp. has been incorporated with 40,000 shares at $10 each par value to manufacture pneumatic, rotary and other motors, by J. F. Skinner, J. E. Sample and James E. Frazier.

INDIANAPOLIS—Brocies Mfg. Corp. has been incorporated with 1000 shares no par value to manufacture automotive equipment and accessories, by Everett L. Brocies, T. H. Kohmstok and associates.

SOUTH BEND, IND.—Willapa Harbor Iron Works, Dan Coulter manager, will rebuild its foundry building, recently burned.

Illinois

CHICAGO — Herman-Howell Car Wrecking Co., 300 West Sixty-seventh street, has been incorporated to buy and wreck freight cars and similar reclaiming operations, by Edgar T. Schoen, attorney, 1448 First National Bank building, Chicago.

EAST MOLINE, ILL.—International Harvester Co., 606 South Michigan avenue, Chicago, plans a plant addition to cost $150,000, with equipment. General contract let to Tunnicliff Construction Co., 1225 North Second street, Davenport, Iowa.

EL DORADO, ILL.—Preliminary surveys are being made looking to construction of a municipal electric light and power plant, with generating equipment and distribution system. Warren & VanPraag, Milliken building, Decatur, Ill., are engineers.

FREEPORT, ILL.—W. Ohlendorf, 13½ West Main street, plans to build a brewery costing $50,000, including equipment.

ROCKFORD, ILL.—Real and personal assets of Emerson-Brantingham Corp., manufacturer of kitchen and medicine cabinets in enameled steel, electric heaters, castings and agricultural implement repairs, will be sold at auction for the receivers, beginning June 27. Michael Tauber & Co., Chicago, will conduct the sale.

WEST FRANKFORT, ILL.—City plans erection of a power plant, $800,000 in bonds being voted for the purpose. Schneider Engineering Co., Chicago, is engineer.

Southern States

WASHINGTON—Bids will be opened July 6 at the United States engineer's office for construction of the booster pumping plant buildings for the Washington aqueduct, to increase water supply for the District of Columbia. Other work includes a dam and sluice gates. Special pumps costing $59,000 have been bought for installation in this plant.

VERSAILLES, KY.—City plans construction of an intake and pumping station on the Kentucky river about 80 miles above junction with the Ohio river.

LAKE CHARLES, LA.—Shell Petroleum Co., Shell building, Houston, Tex., will spend about $500,000 in construction of a pipeline, loading terminals, tank farm, storage tanks and other equipment at its field camp at Iowa, La. The pipeline, 18 miles long costing $250,000, will connect the producing properties with loading terminals to be built on the Calcasieu river and will be equipped with a pumping station. T. E. Swigert, Shell building, Houston, Tex., is vice president in charge of plans.

CHARLOTTE, N. C.—Kennedy-Van Saun Corp., A. W. Hamilton, director, Charlotte, N. C., and 2 Park avenue, New York, plans a plant here for the manufacture of crushing and mining machinery, costing $500,000 to $1,000,000.

HUNTINGTON, W. VA.—Owens-Illinois Glass Co., Toledo, O., has let contract to Rust Engineering Co., Pittsburgh, for a warehouse here, requiring

225 tons of structural steel, to be supplied by Fort Pitt Bridge Works, Pittsburgh.

Oklahoma

ENID, OKLA.—Metal Products Co. has been incorporated with $10,000 capital by Roland E. Diesterweg, president.

OKLAHOMA CITY, OKLA.—Comet Refining Co. has been incorporated with $3200 capital to operate an oil refinery, by Ben Fidler, 1004 N. W Twentieth street, Oklahoma City, Okla.

TULSA, OKLA.—Santa Ana Mining Corp. has been incorporated with $3000 capital, by J. B. McAnally, Hunt building, Tulsa, Okla.

TULSA, OKLA.—P. & R. Service shop has been established at 414 East Archer street to do general machine work, by Ed Roberts, manager.

Texas

HOUSTON, TEX.—Memorial Arts Inc. has been incorporated with $3000 capital to manufacture ornamental metal products, by J. F. Eubank and associates.

HOUSTON, TEX.—Southern Pacific Lines, R. W. Barnes chief engineer, 916 Southern Pacific building, has asked bids July 10 for a new passenger station and terminal to cost $1,200,000, including power plant 31 x 47 feet.

HOUSTON, TEX.—Humble Pipe Line Co., Humble building, is building a 6-inch pipeline, 13 miles long, from its main line near Houston to the new Tom Ball oilfield in northern Harris county. No pumping stations are planned, it is reported.

Wisconsin

BELOIT, WIS.—City council has authorized the purchase from Fairbanks, Morse & Co., with main works here, of three diesel engines, generators, exciters and accessories, at $49,884, for a new municipal power plant, estimated to cost $133,000 complete.

MARINETTE, WIS.—United Collieries Inc., Cincinnati, has bought a large tract on the water front and will install complete coal-handling equipment.

MILWAUKEE—Supreme Steel Treating Corp. is establishing a new steel-treating plant at 119-123 West Scott street.

MILWAUKEE — Advance Boiler & Tank Co., 3033 West Walnut street, has let contracts for a boiler shop addition 60 x 100 feet, 25 feet high, and an extension to its crane runway. No additional equipment will be needed at present.

MILWAUKEE—Universal Tool & Die Co. has moved its plant from 135 East Washington street to the plant of its parent company, Wrought Washer Mfg. Co., 2100 South Bay street.

OCONTO, WIS.—Oconto Brewing Co. will spend about $65,000 in rehabilitation of its plant, adding a new boiler-house, cooper shop, bottling house, garage. W. C. Weeks, Sheboygan, Wis., is architect.

SHEBOYGAN, WIS.—City council is considering an appropriation of $15,000 for a survey for a municipally-owned electric light and power plant. Erwin Mohr is city clerk.

Idaho

WEISER, IDAHO — Weiser Iron Works, Mila Philliber, manager, is completing a foundry building in connection with his machine shop, which will practically double the size of the plant.

Arizona

PHOENIX, ARIZ.—State highway commission plans installation of machinery and equipment to make automobile plates and highway signs, to cost about $28,000. T. S. Oconnell is state highway engineer.

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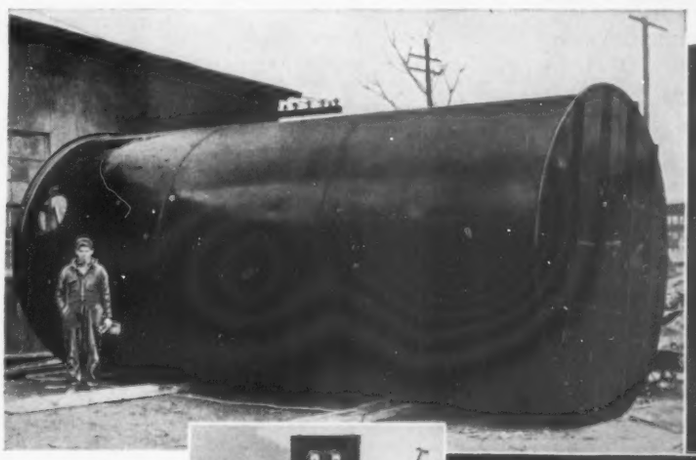

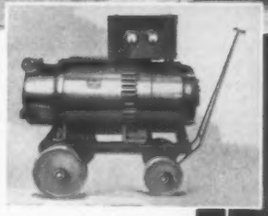

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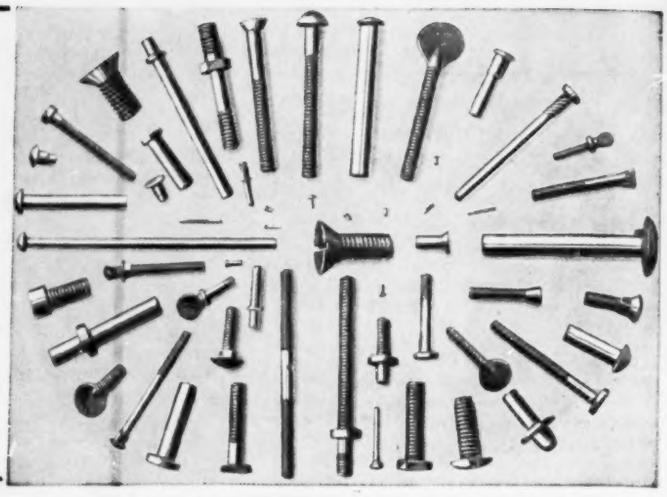

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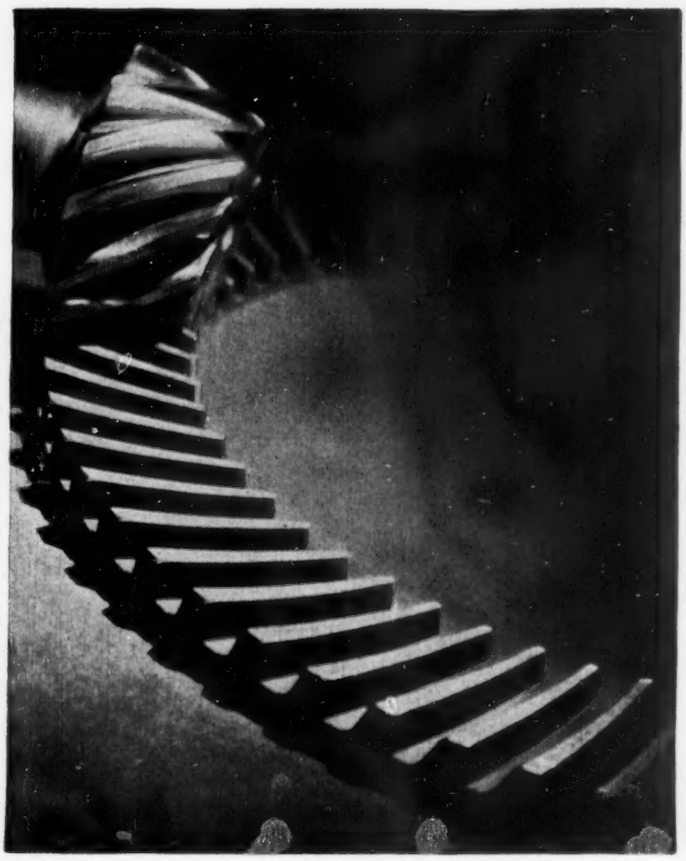
Tooth Strength



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That is where tooth-strength—or the lack of it—shows up. And when the critical test comes, fortunate is the car-owner if his gears are made of Bethlehem Nickel-Molybdenum Gear Steel!

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WELD
THE BETTER
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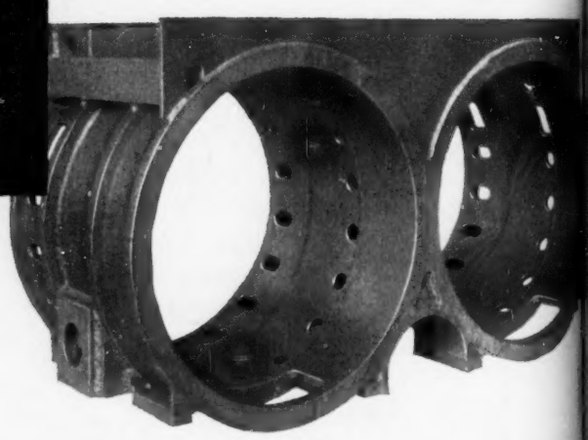

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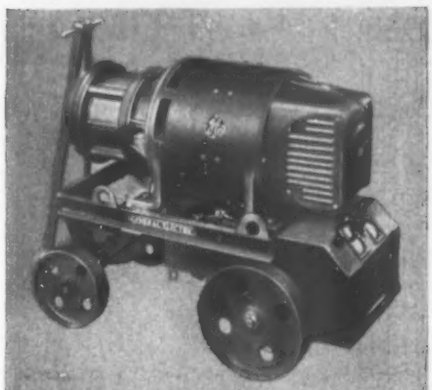

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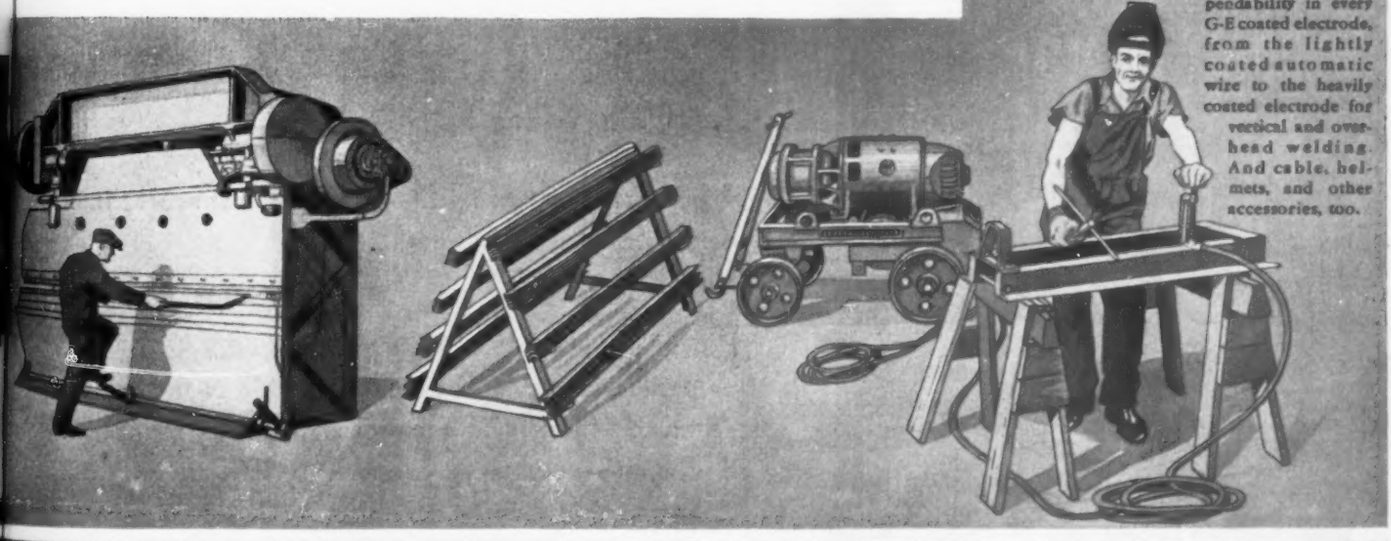

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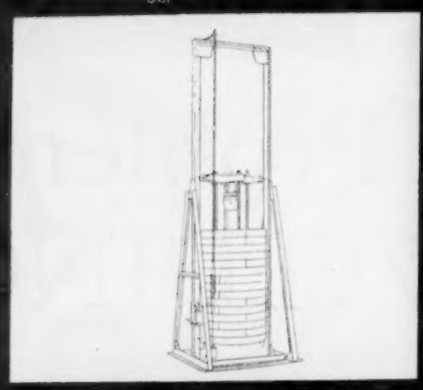
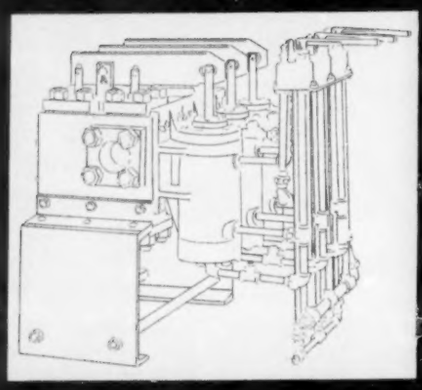
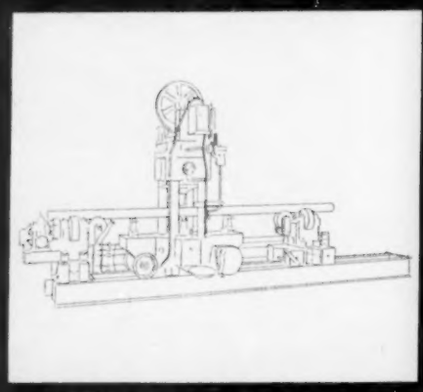


ACCUMULATOR



VALVE



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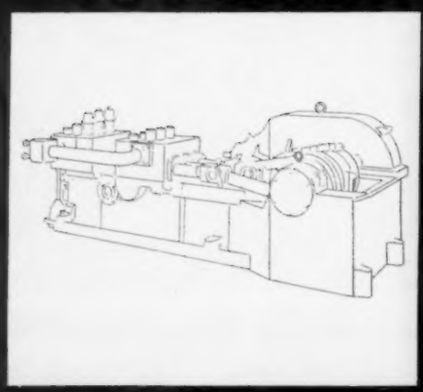

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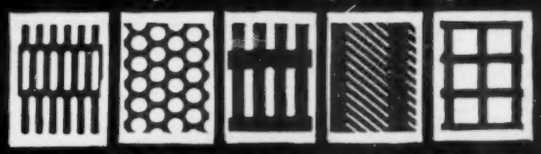

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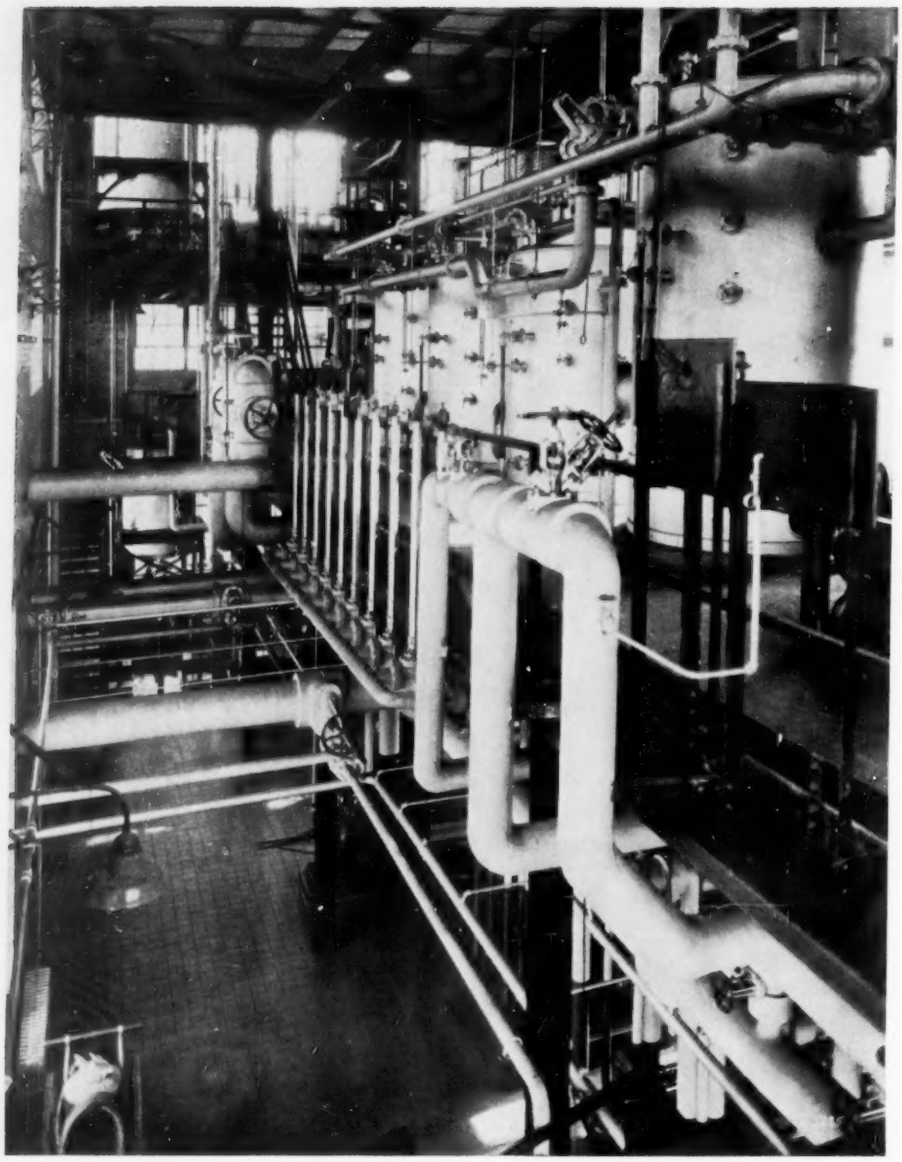

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Pittsburgh, Pa.

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Vol. 92, No. 26, June 26, 1933, issue of STEEL, published weekly at Cleveland, O. Entered as second class matter at the post office, Cleveland, O., under the act of March 3, 1879. Subscription price U. S. one year, $4.00; two years, $6.00; single copy (current issues) 15c. Canada, one year, $6.60; two years, $11.20. Foreign, one year, £2:2:0

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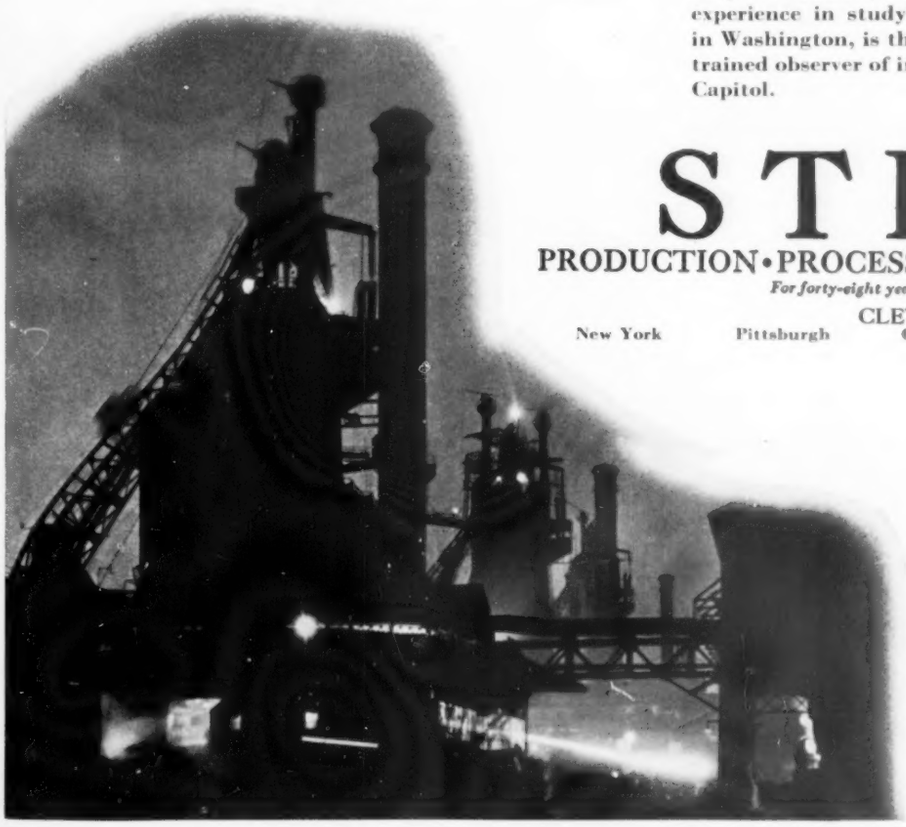
In other words, the much publicized Recovery Act is merely enabling legislation. Its real effect on business will depend almost entirely upon how it is administered for the President by his agents.

Therefore, in order to conduct your business to best advantage under the new law, you must keep posted on the activities of those whom the President has delegated to administer it. The decisions, interpretations and directions issued by General Johnson and his assistants will constitute the rules under which you will run your business. Information of this kind will be indispensable to you.

STEEL will continue to give you authentic, first-hand, behind-the-scenes facts regarding the administration of the Recovery Act. Its "Windows of Washington" (weekly interpretation of Washington news in the manner of "Mirrors of Motordom") will serve you faithfully in connection with the functioning of the Recovery Act, just as during the past few weeks it has kept STEEL'S readers posted accurately on the progress of the legislation through House and Senate.

Do not depend on hunches, rumors or hearsay information for guidance under the Recovery Act. Rely on STEEL, which through many years of experience in studying and interpreting activities in Washington, is thoroughly competent to be *your* trained observer of important events in the nation's Capitol.



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For forty-eight years—IRON TRADE REVIEW

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